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903–956	Nov. 3rd	5488
957–1008	„ 10th	5489
1009–1060	„ 17th	5490
1061–1114	„ 24th	5491
1115–1166	Dec. 1st	5492
1167–1222	„ 8th	5493
1223–1276	„ 15th	5494
1277–1326	„ 22nd	5495
1327–1372	„ 29th	5496

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Chadwick Lectures

ON THE

HISTORY OF EPIDEMIOLOGY

DURING THE LAST HUNDRED YEARS.*

BY SIR WILLIAM HEATON HAMER,
M.D. CAMB., F.R.C.P. LOND.

LECTURE II.

THE sage, Koheleth, "the Preacher," who lived more than 2000 years ago, said there was "no new thing under the sun." The thought is that of the "Persistence in Change" (Dauer im Wechsel) of Goethe, who elsewhere says "Everything that is wise has been thought already; we can only try to think it once more."

Some have surmised that Koheleth was a physician, and certain passages in the book of Ecclesiastes support this view, and have been said to foreshadow the first Aphorism of Hippocrates, or even Sydenham's doctrine that "Epidemics succeed each other regularly and in series forming as it were a circle." A verse much commented upon runs: "He hath made every thing beautiful in his time; also he hath set the world in their heart, so that no man can find out the work that God maketh from the beginning to the end." It is said that the word translated "world" should be rendered "eternity" (or "history"), and such renderings prompt the suggestion that Koheleth was a bit of an epidemiologist; he would then have realised the limitations of his own "little patch of immediacy," and have proceeded as Prof. Whitehead says we must do, to apply the experience gleaned from that patch to the teaching of bygone times.

Be this as it may, the history of epidemiology is replete with illustrations of such lines of thought.

Thus it has been suggested that one of the most characteristic marks of pandemic influenza is that it is generally acclaimed by mankind as a "new disease," and then, as Dr. Goodall says, and there is no greater living authority on such a point, "there is no such thing as a new infectious disease." The occurrences of 1915–25 almost seem to justify the application to influenza of Alphonse Karr's phrase, "Plus ça change, plus c'est la même chose," and to support Hirsch's somewhat paradoxical declaration that "Influenza, beyond all other acute infective diseases, has manifested at all times and in all places the stamp of uniformity in the aggregate of symptoms." Dr. Charles Creighton's History prompts similar lines of inquiry. The accounts of the "Sweating Sickness," of "Gaol Fevers, Influenzas and other Fevers of the Tudor Period," the great chapters on "Typhus and other Continued Fevers" and "Fevers and Dysentery in Ireland," leading up to "Influenza and Epidemic Agues," in which we are told "Epidemic Agues are joined in the same Chapter with Influenzas for the reason that they can hardly be separated from them in the earlier part of the history," this stirring argument was set out by an historian steeped in the medical learning of the earlier centuries, familiar with the life-work of Sydenham, Willis, and their contemporaries, and with that of the school founded by them, and was critically and appreciatively expounded in relation with the "influenzas," which had appeared under that name, upon the stage of history during subsequent years. Creighton's facts and speculations stirred the minds of his readers between 1894 and 1915, and made them more apt to receive the impressions hammered upon them during the then succeeding years.

Already in the early 'nineties Franklin Parsons laid stress upon the types (pulmonary, cerebro-spinal, and gastro-intestinal) of influenzal prevalences. Moreover, Leichtenstern urged then that "Influenza presents at least two phases, one pandemic and the other endemic, and they follow different epidemiologic rules"; he further expressed two beliefs—first, that "trailing epidemics show diminished morbidity, less wide geographical distribution, scarcely recognisable communicability, slow development and extension, and continuous diminution in frequency and intensity"; and, second, that "in the later epidemics the *vis morbi* became more pronounced with the decrease of the *vis contagii*, owing perhaps to weakened influenza germs entering into closer symbiosis with other pathogenic organisms."

Again, Dr. Goodhart declared in the middle of the 'nineties "influenza is still with us," and it was becoming recognised that in family attacks of influenza the disease was apt to be quite differently manifested in the several sufferers, and, if this was accepted as regarded households, why, it was being asked, was it not credible as regards communities also?

In East Herts, in 1904–5, Dunn and Gordon described their "obscure disease simulating influenza"; then came the cerebro-spinal fevers of Glasgow and Belfast, the polio-myelitis reported upon by Brorström in Sweden and by Farrar and Reece in this country, and that of New York in 1916. In London Shirley Murphy more than 20 years ago secured the notification of cerebro-spinal fever and soon afterwards of poliomyelitis and polio-encephalitis, and borough medical officers made careful study of each case notified. As early as Jan. 26th, 1912, it was possible to assure Dr. Reece that cerebro-spinal fever and poliomyelitis were distinguishable, one from the other, by reason of the fact that the record of the former appeared on blue forms and that of the latter on white forms. In the London Annual Reports for 1914–17 account of the behaviour of these two epidemic diseases was given, and in 1915 study of the close relationship between cerebro-spinal fever and influenza in London was made.

Then came the prevalences of 1918, and early in that year it was apparent that "The events of the last few months once more strikingly illustrate the 'posting character,' the unexpected manifestations and the protean behaviour of 'influenza'; and, incidentally, the close connexion between polio-encephalitis (i.e., what has since been called encephalitis lethargica), poliomyelitis and cerebro-spinal meningitis, and influenza, seems to be established." (Annual Report for 1917, p. 2.)

In the Ministry of Health Report of 1920 Sir George Newman gave (p. 16) an account of "our growing experience of the setting of an influenza epidemic"; and the same report sets out in detail the experiences of John Huxham between 1728 and 1752, and presents a summary record (p. 17 and onwards) of similar phenomena collected by various observers, from Sydenham's time down to 1847.

Study of the epidemiological record, then, makes it clear that, so far as the influenzal group of diseases is concerned, the natural history method, the method of Hippocrates, is that which must primarily be relied upon.

Dr. Adams tells us that it is very difficult to assign the cases described in the first book of the Epidemics of Hippocrates to their appropriate disease categories. The reason, he says, is that they are "directly drawn from Nature." Sydenham followed this method, and Dr. Payne not many years ago remarked that it is sometimes impossible to decide as to the nature of the prevalences he is discussing. Nowadays we are very prone to think in terms of "causal organisms" (as we used to call them; they are really many of them just "associated organisms"), whereas Sydenham and his followers unravelled the relationships between *associated prevalences of epidemic diseases*, and we are beginning to realise that it behoves us, too, to think in epidemics as well as in micro-organisms.

The outcome of all this may be best appreciated by focusing attention upon Sydenham's treatment of the difficulties with regard to influenza; but it must be a reversion to Sydenham's matured views, not merely to the tentative and, as would now appear, somewhat prematurely conceived doctrines enunciated in those wonderful opening chapters of his Medical Observations.

This first draft, so to speak, underwent in Sydenham's own mind a considerable amount of revision; the original sketch was, however, incorporated in a revised edition in 1675, and, achieving in this form, as it soon did, a world-wide reputation, has not unnaturally been commonly regarded as representing his final view; examination of the development of the conceptions revealed in the writings of the older Sydenham will, however, show that this was very far from being the case. Already in 1675 (Med. Obs. V., vi., 6) it appears he was beginning to concern himself with what now seems a somewhat meticulous enumeration of differentiæ between the "stationary fevers" of his earlier constitutions, and, even at that date (V., v., 1–3, and V., vi., 1–2) he noted the resemblance of his first stationary fever to the fever of the winter of 1675, to which, and to the successors of which, he makes fuller reference in the letter to Dr. Brady of 1680 (paras. 54–57). He speaks of it as the "depuratory fever," the "standard fever of Nature," the "fever upon which Hippocrates and other great physicians of antiquity have commented."

One never need feel surprise at coming across some new light in studying Sydenham, and it is not to be wondered at, therefore, that a pearl of great price is to be found hidden in what is at first sight a somewhat unpromising Postscript to his "Tractate on Dropsy"

* Being two lectures delivered in London under the Chadwick Trust on Feb. 16th and 23rd, 1928. Lecture I. appeared in THE LANCET last week.

written in 1683; here, after two and a half centuries, we can still glimpse one of his flashes of inspiration.

It relates to an epidemic following after that intriguing fever of 1675 already alluded to above. He has pondered over this and its successors with special fondness, and now he encounters the prevalence of 1679 which has been hailed by modern epidemiologists as an influenza trailer. This led him formally to abandon the impression he had at first entertained that the fever of 1679 was something new. He says it must be reckoned as a common "intercurrent," and he styles it the "winter fever"; then later still (Sched. Mon., 1, 4) he explains that, while at first disposed to regard this "winter fever" as just an "intercurrent"—i.e., as "a bastard peripneumony which occurs in all winters alike," he now realises that it is entitled to rank as a stationary fever; he proceeds, therefore, to execute a full-length portrait of it (Sched. Mon., 1), and there it stands, an unmistakable example of a cerebro-spinal influenza of the seventeenth century, of which the London cerebro-spinal fever of 1915 was, as was claimed at the Royal Society of Medicine at the time, an indubitable lineal descendant. In the final paragraph of Sydenham's account (loc. cit., 46) he has another inspiration, for he says of this stationary fever, "It may be a spirituous and subtle beginning of something else, the germ perhaps of the depuratory fever now exploded, but which the plague followed." Of course, as we now know, it was the precursor of the influenza of 1688, just as the London cerebro-spinal fever of 1915 was the precursor of the great influenza of 1918.

The new light afforded by demonstration of the relationship of this fever of 1685 to the succeeding influenza, and especially the clear recognition, which has just been noted, by Sydenham of the possibility, nay likelihood, that this 1685 fever was identical with the stationary fever ("depuratory fever") of 1661–64, in which he had been so greatly interested nearly a quarter of a century previously, enable us step by step to trace the development of his maturing view that the standard fever of 1661–64, that of the winter of 1675, the depuratory fever, the "winter fever" of the Postscript of 1683 above referred to, the fever of 1685, and we must now add the influenza of 1688 (though that was the year of Sydenham's death), were all phases of one abiding influence. There is here, in fact, the germ of that modern conception "endemic influenza."

In recent discussions regarding Sydenham's Constitutions at the Royal Society of Medicine, while there has been some difference of opinion on the general questions at issue, there has been practical unanimity concerning the special application of his thesis to epidemic prevalences associated with influenza. It may be of interest, therefore, briefly to indicate the extent to which twentieth century findings concerning the influenzal constitution were adumbrated by Sydenham.

In the first place, Sydenham's account of his fifth constitution, that of part of the year 1673 and of the whole years 1674 and 1675, is now recognisable as the classical description of an influenzal constitution. It comprehends a widespread influenza occurring (to use Sydenham's terminology) in a setting of "comatose fevers." This series of prevalences quite plainly furnishes the almost exact counterpart to the great influenzas of 1918 with their precursors and trailers. Thus, following upon comatose fevers in 1673 and 1674, we are told, the fever of 1675 "spread its ravages far and wide" in July (exactly, it may be noted, in passing, as it did in 1918); the attack was first upon the bowels and then the head, the fever, however, "having the predominance and taking the lead of the other maladies of the year." The notion was entertained by some, says Sydenham, that the complicating "dysentery and diarrhœa which did so much mischief arose from these two diseases; whereas in reality they were to be imputed to the fever" (i.e., to influenza). "Everyone, however, who had any practice among the sick, knew the predominance of the fever and knew also that the aforesaid dysentery and diarrhœa were symptoms rather than essential and primary diseases." (Med. Obs., V., i., 5; see also V., ii., 23.) "This was the course which was held by the fever throughout the autumn, sometimes it attacked the head, sometimes the bowels. It everywhere put on the symptoms of the particular part affected." At the end of October the weather "suddenly changed to wet and cold. This brought on coughs and catarrhs, which" (says Sydenham) "were more numerous than ever I remember them to have been," and upon these "supervened the stationary fever, of the year (as in October–November, 1918), and this, having once taken its hold, increased, and varied in some of its symptoms from the fever of the previous part of the year" (attacking, however, now the lungs and pleura instead of the head and bowels). At the end of November the catarrhs and coughs suddenly decreased. "The fever, however, remained as before, just as it was before the catarrhs" (V., i., 7). "All that suffered, suffered first in the head, back, and limbs; these being the symptoms" (of the influenza, as we should say, but keeping Sydenham's wording it reads) "which were most constant to the non-pleuritic fevers, which preceded and which characterised them to their close." (VI., i., 6.)

Sydenham's description is unmatchable for vision, precision, and terseness of expression; moreover, he explicitly reiterates, again and again, that while the bowels, brain, and lungs were successively attacked, the accompanying diarrhœa, stupor, and pneumonia were all merely symptomatic of one stationary fever, and the characteristic marks of that fever he stamps most unmistakably upon it.

In the second place, it is clear that the pulmonary trailer of 1679 riveted Sydenham's attention upon the special type of prevalence with which the influenzas of "the 'nineties" made Western Europe so familiar; after much study and reflection he concluded that the said fever recurring winter after winter was identifiable not only with the fever of 1685 (see R.S.M., loc. cit. 1915) and thus heralded in that "spirituous and subtle something" (the influenza of 1688), but was also identifiable with the "depuratory fever," which had accompanied and been found to be interchangeable with the "intermittents" of 1661–64 (i.e., with the gastro-intestinal, pulmonary, and nervous trailing epidemics) following the great influenza of 1658.

Then, thirdly, we have Sydenham's statement (M.O., V., vi., 2) regarding the interchangeability of the intermittents and the stationary fevers, which "ran parallel with them"; and he formulates the thesis (letter to Dr. Brady, para. 56) that in intermittents "Nature works hastily and gets over in less time than is regular the processes by which she first tempers and afterwards discharges the morbific matter." "Depuratory fevers," he adds, "are different; 13 or 14 days elapse before the appearance of any signs of the concoction of the febrile matter, which is then to be ejected by sweats; or rather by a somewhat free transpiration." Again, in para. 57, he contrasts the later "humoral or earthy fevers, which cleared the blood but slowly," with the earlier fevers of the same constitution, "which were subtle in principle, intermittent in type and did their work more rapidly."

Elsewhere[1] the application to the study of the influenza wave of this mutation theory of Sydenham has been discussed; to use modern phrasing, he is contending that the virus of influenza works more easily and rapidly near the crests of the pandemics and with more difficulty and more slowly in the intervening troughs.

Furthermore, there may also be deduced from Sydenham's own writings the conclusion that between the widespread prevalences on the crests of the great pandemic influenza waves and the depuratory fevers (or endemic influenzas) of the troughs, ripples of intermittents appear, both on the ascending and descending slopes of the great ocean rollers. Sydenham, as is well known, identified the intermittents of 1675–79 (following the great influenza of 1675) with those of 1661–64 (following the great influenza of 1658); but he also makes it clear (IV., i., 5 and 6) that similar intermittents preceded both the influenza of 1675 and that of 1688 (Sched. Mon. I., 46).

Let us recall his statement made in 1675 (I., ii., 21–23):

"I may state at once, that to reduce into classes all the species of epidemics, to arrange them according to their phenomena, to work out their several idiopathic characteristics, to determine in detail the proper method of treatment for each of them is a work so difficult, an arrangement requiring so much leisure and opportunity, a cycle so little coincident with any recognised sequence of years, that the lifetime of no single physician would suffice for the collection of a sufficiency of data." But he was better than his word, for we find him later adding material contributions to what (in 1675) he had described as "My mite, such as it is, towards the foundation of a work, that in my humble judgment shall be beneficial to the human race."

As so much has been said and thought recently concerning influenza, it may be of interest to refer to a question forced into prominence of late years, that of the damage inflicted by that disease upon the nervous system. The relation of cycles of genius to

[1] Proc. Roy. Soc. Med., 1927, xx., Epidem. Sect., 60–61.

prevalences of influenza was recently undertaken with a view to ascertaining whether "influenza years" were years in which such damage especially resulted. In the first instance the attempt had been made to obtain confirmation of the suspicion that influenza plays a part in the causation of insanity. The records of insanity, however, are of such recent date, and are so beset with fallacies, as to make this task an exceedingly difficult one; it seemed then to be a more practicable plan to begin, as it were, at the other end—i.e., with men of genius, and to try to ascertain whether the extent to which their nervous systems are damaged by influenza can be gauged with any approach to accuracy.

At first sight it was surmised that the influence, if any, might be expected to be most conspicuously revealed at the age of special intellectual development and of main output of mental work, say at 25–50. On further consideration it was decided to examine in like manner a corresponding graph for the earlier age-period 0–25. Later still it seemed desirable that the graph for ages 50–75 should also be constructed. The three graphs present some resemblances and some noteworthy contrasts.

As they relate to the same lives at different age-periods—in youth, in early and in later maturity, respectively—it is obvious that the three contours will show a considerable degree of resemblance. On examining the special effect of groups of "influenzal years" it is at once apparent that they operate prejudicially in all three graphs, but their evil influence is most discernible in the 0–25 graph.

The marked influenza periods of the last three centuries—1657–93, 1708–18, 1729–43, 1757–67, 1780–90, 1798–1807, 1824–37, 1842–51, 1857–64, 1890–95, and 1915–25, were scrutinised seriatim to ascertain the depth of the depression produced at these times in the outlines of the graphs for 0–25, 25–50, and 50–75 years of age respectively. In the case of each depression an *index* was obtained representing the proportion of loss per number of lives at risk for each group of influenzal years. This index was found to vary from practically *nil* in three instances to the *highest limit* of approximately one-half.

The question at once rises whether on the average these indices approximate to what might have been expected a priori in dealing with *any* epidemic disease causing mortality in the population at large and incidentally influencing the output of work by men of genius?

In the first place, no epidemic disease of which precise statistics are available causes such ravages as are shown in these graphs relating to the influenzal group of diseases. Limiting consideration, then, to that group, the greatest recorded rates of mortality for the population as a whole was that of 1918. The total London loss from influenza in that year was about 18,000, rather more than one-fifth of the total deaths registered. So high an "index" as this was not forthcoming in any earlier group of years, though the *proportion of total deaths to population* was equally high in two individual years of special influenza prevalence during the middle third of the eighteenth century. The average index, taken over the whole of the prevalences of the last 250 years, was clearly very much less than one-fifth.

It is hence apparent that the influenzal group of epidemics leave their impress to a quite excessive extent upon men of marked ability as compared with the population as a whole.

It was, in bygone times, almost a commonplace that sweat, influenza, and "volatile typhus" affected "gens aisés," "people of the court," and the "noblesse," in contradistinction to other epidemics which specially attacked the poor, badly housed, and ill-nourished.

One reason for this excessive class incidence may have been that those who used their heads were more liable to suffer than those who used their hands. We must, in fact, be prepared to accept the conclusion that the widespread prevalences of influenza during the last two and a half centuries have levied a specially heavy toll upon men of marked ability; and in some conspicuous instances the facts are on record that the influenzas of past times again and again attacked notable men and women. Chopin, Sterne, Swift, Jane Welsh Carlyle, and William James may be referred to as instances of this, and for the abrupt termination of the lives of many remarkable men (from Shakspere and Cromwell onwards) influenza was presumably responsible.

The critic may urge that, while appreciating that something may be said for approaching the study of epidemiology from the "big endian," as opposed to the "little endian," point of view, he would like to know whether it is likely that anything of *practical* value will result from adopting this method of approach, say, for example, in the case of influenza. Certain conclusions may at any rate be drawn. Influenza is, as Noah Webster said years ago, the "crux of epidemiology." It is not merely, as it was long supposed to be, a "pandemic disease" reappearing once or twice in a generation, but it is ever present, now smouldering and then every 10, 15, or 20 years, bursting into flame. Its great prevalences are especially favoured by war, famine, overcrowding, and free communication with sufferers from the disease in the early stages of their illness. Despite, however, the huge increase of means of intercommunication and traffic during the last 100 years, coupled with entire absence of systematic attempts to limit spread of the disease by sufferers in the early stages of illness, the mortality in London from the influenzal group of diseases appears not to be appreciably greater in proportion to population than it was 150 years ago. The influences that have made for good have been improved feeding, better housing, greater cleanliness, and provision of medical and nursing care in serious cases; but now while continuing to develop resistance on these lines, there *should be added*, thereto, carefully considered measures for preventing sufferers from mixing freely with their fellows in offices, schools, conveyances, and places of assembly, as they do at present while in the early highly infectious stages of illness; above all, it must be appreciated that the most extravagant and bizarre efforts made, under the influence of panic, at times of widespread prevalence, are as nothing compared with steady and continued prosecution of a considered campaign against the influenzal group of diseases, conducted on epidemiological lines.

The conclusion from a survey of the last century of epidemiology would then appear to be that already reached by a number of Chadwick lecturers. It was first stated, however, by Sir William Collins, in a form in which it is particularly applicable to epidemiology in an address on "Physic and Metaphysic," delivered to the Abernethian Society on Feb. 16th, 1905. Sir William, quoting Dr. Martineau, says:—

> "Laplace, in scanning the heavens with his telescope, could find no God, and Lawrence declared that the scalpel in dissecting the brain came upon no soul. Both are unquestionably true, and it is precisely the truth of the second that vitiates the intended inferences from the first. Had the scalpel alighted on some perceptible soul we might have required of the telescope to perform a similar task; and on its bringing in a dumb report have concluded that there was *only mechanism there*. But in spite of the knife's failure, we positively know that conscious thought and will *were* present, yet no more visible yesterday; and *so* that the telescope misses all but the bodies of the universe and their light avails nothing to prove the absence of a living mind through all. If you have the wrong instrument the objects of your search may well evade you. The test-tube will not detect an insincerity or the microscope analyse a grief."

This question of instruments assumes nowadays very great importance in connexion with epidemic disease, for epidemiologists using field implements sometimes glean very different conclusions from those deduced by bacteriologists employing laboratory implements. As an example "food poisoning" may be referred to. The epidemiological evidence has gradually accumulated during the last three and a half centuries. Dr. J. J. Walsh (International Congress of Medicine, 1913) carries us back to the food poisonings of the Middle Ages, which, he says, were in the main cases of illness (often apparently of infectious illness) with obscure abdominal or cerebro-spinal symptoms; and thus the characters of those supposed "pitiless poisoners," the Borgias, were taken away owing in part presumably to unrecognised prevalences of gastro-intestinal and cerebro-spinal influenza. Ozanam also testifies that epidemic encephalitis was often regarded as due to poisoned food. Crookshank has carefully set out the evidence for acceptance, as cerebro-spinal influenza, of much of the "convulsive ergotism" of past centuries. Even as recently as 1888 we find the

Middlesbrough outbreak of pneumonia ascribed to food. Lichtenstern, however, spoke confidently of "influenza dinners" in the early 'nineties, and Bulstrode's report on the Greenwich outbreak of 1893 was typical of many others in which influenza and not food was presumably at fault.

But the whirligig of time brings in its revenges and many supposed food outbreaks of the 'nineties were studied exclusively from the bacteriological point of view; again, during the recent influenzas, botulism ran riot in the Western States of America and both here and on the continent large numbers of reports on food outbreaks appeared, in which "causal organisms" (complying with appropriate serological tests) were described and exhaustively studied, from many points of view, but not from that of possible association with the prevailing epidemic. In a recent report [2] mention, however, is made of a "considerable number of cases which are ascribed, often very confidently, to food poisoning without any justification." Moreover, we learn that "Medical officers and others have sometimes limited their interest and activity to tracing the outbreak to some given article of food" . . . while "the more distant sources have been left untraced"; even in the report in question, oddly enough, no mention is made of influenza, though the survey relates to outbreaks occurring during years of widespread prevalence of that disease.

The records of these recent years, in fact, abundantly bear witness to the need that field observations and field research should have place as well as laboratory observations and laboratory research, the two sets of findings being placed alongside one another and coördinated together. Given such a consummation, it may be surmised that, in public health, as in other scientific work, an "Age of Professionalism and Specialism" will slowly but surely give place to an age in which interest will be taken in general principles as well as in stubborn and irreducible facts. This is the lesson, which he who runs may read, in the history of epidemiology during the last hundred years.

THE INTENSIVE SERUM TREATMENT OF SEVERE DIPHTHERIA.

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This article contains preliminary observations upon the treatment of severe diphtheria by large doses of antitoxin, administered chiefly by the intravenous route. This has been a routine measure for over a year in the City of Leicester Isolation Hospital and, although the period is short, the results justify this report. Perhaps the most striking feature is the reduction in the hospital death-rate from diphtheria. The average death-rate calculated upon all completed cases—i.e., those discharged or died—during the 11 years 1916–26 was 9·3 per cent., the lowest mortality in any year being 7·3 per cent., and the highest 13·2 per cent. The new method was adopted on April 1st, 1927, and during the succeeding period of 12 months—i.e., to March 31st, 1928—the death-rate was 2·6 per cent. Excluding laryngeal cases and patients dying within 12 hours of admission, the death-rate was 1·7 per cent. The chart shows the reduction.

The 300 verified cases dealt with during the period included no less than 27 malignant or severely toxic cases of diphtheria (Group A), most of whom, according to our former experience, would have died under the older method of treatment whereas, under the new conditions, only six died. The very toxic cases amounted to 9 per cent. of the total, and this figure approximately corresponds with the average death-rate for past years. On the other hand, the number of laryngeal cases was exceptionally low during the period, and this fact would tend to keep the death-rate low. Nevertheless, we are convinced that the reduction actually effected in the mortality was chiefly due to the number of severe toxic cases which recovered under the intensive method of antitoxin treatment.

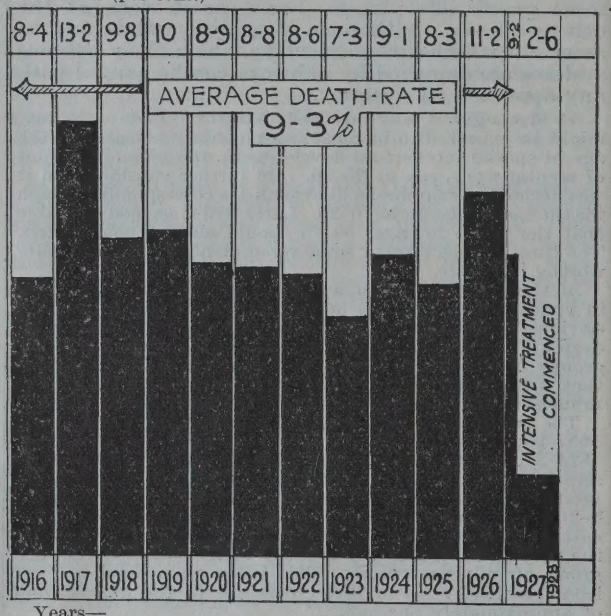

Chart showing the percentage mortality of cases of diphtheria treated at the Leicester Isolation Hospital from 1916–28.

Classification of the Cases.

During the year 326 cases were discharged from, or died in, the diphtheria wards, and of these 26 were proved to be not suffering from diphtheria and have been excluded. Of the 300 verified and completed cases, seven were infants with laryngeal diphtheria. The remaining 293 cases have been classified for convenience into three groups, according to the extent of the local manifestations and the degree of toxæmia. Following out the five points of the scheme detailed below and knowing the subsequent history, we have had little difficulty in assigning each case to its appropriate group. The classification cannot always be made with certainty when the case is first admitted, but is generally easy after a few days.

Group A (malignant or severely toxic) comprised 27 cases having the following five outstanding clinical features:—

(1) *Extensive diphtheritic membrane* involving fauces, tonsils, uvula, soft palate, and naso-pharynx. In some the membrane extended over the hard palate even to the teeth and in others covered the nasal mucous membrane. Towards the spreading margin the membrane usually presented a semi-transparent glistening appearance with an ill-defined edge; these characteristics usually signify a rapid spread. Œdema of the fauces adds to the gravity of the case.

(2) *Cervical adenitis and peri-adenitis* of severe degree, the swelling in the neck having the typical rounded contour. The condition varied from the extreme "bull-neck" type with enormous uniform swelling all round the neck to the type which might almost be described as unilateral. In no case was the size of the swelling less than that of a hen's egg.

(3) Nasal discharge generally profuse, sometimes hæmorrhagic, very rarely scanty.

[2] Med. Research Rep., 1925, No. 92.

(4) Fœtid odour from the throat, typical of severe diphtheria.
(5) Toxæmia of severe degree characterised, inter alia, by delirium, stupor, and coma in the worst cases, and by great lethargy and hebetude in the others.

Group B (moderately toxic), consisted of 52 cases having the above features, modified as follows:—
(1) Extent of membrane: the tonsils, one of both pillars of fauces, and a small area of soft palate or naso-pharynx covered.
(2) Cervical adenopathy: the cervical glands enlarged to about the size of a walnut and with some degree of peri-adenitis.
(3) Nasal discharge: scanty or absent.
(4) Fœtor from throat: generally nil; sometimes could be detected.
(5) Evidence of toxæmia: the quiet, subdued demeanour of diphtheria, but with mental alertness.

Group C (moderate and mild) comprised the great bulk of the cases (214 in number) and had the following features:—
(1) Extent of membrane: not spreading further than the pillars of the fauces.
(2) Cervical adenopathy: enlarged glands palpable in most cases but not visible.
(3) Nasal discharge: scanty or nil.
(4) Fœtor from throat: generally nil; sometimes could be detected.
(5) Evidence of toxæmia: the quiet, subdued demeanour of diphtheria, but with mental alertness.

Dosage of Antitoxin Employed.

All cases deemed on admission to belong to Group A had antitoxin administered both intravenously and intramuscularly in doses varying from 70,000 to 200,000 units. Generally the dose given on admission was about 50,000 units intravenously and 20,000 intramuscularly. In a few of the worst cases doses up to double these amounts were given on admission. Where there seemed to be an insufficient response in about 12 hours' time a second dose was given. The chief indications for a second dose were: (1) The local condition: the membrane should have begun to become opaque with well-defined raised margins, showing that spread had ceased; the cervical swelling should have become correspondingly reduced. (2) The general condition: the patient should have become appreciably brighter and more alert, showing a diminution of the toxæmia. The latter point is the test par excellence of the adequacy of dosage in the severe toxic cases of diphtheria. If there is no improvement or inconsiderable improvement in the dull stuporous mental condition, then a second large dose of serum intravenously is most certainly indicated. More serum was given 24 and 36 hours after admission if there were insufficient signs of arrest of the disease or of the toxæmia. The average dose of serum actually given in the 27 cases of this group was 71,000 units intravenously and 31,000 units intramuscularly.

In Group B the first dose was generally about 20,000 units intravenously and 8000 to 16,000 intramuscularly. Occasionally a second dose was required. The average dose for the 52 cases of Group B worked out at 19,000 units intravenously and 19,000 units intramuscularly. In Group C no departure was made from the well-recognised dosage for moderate and mild diphtheria—viz., 8000–16,000 units intramuscularly. The average dose in this group worked out at the rather high figure of 14,000 units. This was due, no doubt, to some excess of caution where it was doubtful on admission whether the case should be classified in Group B or Group C.

Technique.

The technique of intravenous injection of large amounts of serum in young children does not, as a rule, present much difficulty after some practice. It takes time, however, and one of more assistants are generally necessary.

The vein of choice is the median basilic at the bend of the elbow, and if failure is encountered here in both arms a superficial vein in front of the ankle-joint or over the dorsum of the foot is explored. In the youngest infants the finest hypodermic needle, and in older children a medium or large bore hypodermic needle is employed. The serum is injected directly from 10 c.cm. or 20 c.cm. Record syringes, preferably with eccentric nozzles. The whole amount to be injected is ready at hand in the syringes before the puncture is made. A tourniquet is applied to the upper arm, and one assistant keeps the arm firmly hyperextended by pressing on the triceps area with one hand and on the anterior aspect of the wrist with the other. When the puncture is made it is essential to withdraw a little blood into the syringe before attempting the injection, since otherwise the needle-point may not be lying actually within the vein. The serum is necessarily injected slowly through such a fine needle, and care must be taken to avoid the entry of air-bubbles into the vein. In detaching the syringe from the needle great care is required to avoid dislodging the needle-point from the vein. The second syringe, full of serum, is attached to the needle as soon as a drop of blood appears at the needle-mount. When the requisite amount of serum has been injected the syringe is detached and the needles left in the vein, and our present practice is then to inject 4 to 8 minims of adrenalin intravenously by attaching a hypodermic syringe. Alternatively ½ c.cm. of pituitrin may be injected intramuscularly. The time taken in the whole process of intravenous injection may be as long as 20 minutes in young or fractious children. Very few children offer resistance, since the injection is painless. Indeed, all children prefer intravenous to intramuscular or subcutaneous injection.

The concentration of serum which we have found suitable is about 1400 units per c.cm., but the viscosity, rather than the concentration, is the important point. Serum of higher concentration is exceedingly difficult to push through the bore of a fine hypodermic needle, while a lower concentration involves the injection of a greater amount of foreign protein.

Immediately after the injection the child is covered with warm blankets and packed round with hot-water bottles, and the foot of the bed is raised. In other words, he is treated prophylactically for the rigor and collapse which has occurred in half our patients within half to three hours. The prophylactic administration of intravenous adrenalin, or of intramuscular pituitrin, promises to reduce the incidence and severity of these reactions.

The rationale of intravenous injection of serum is obvious since the maximum concentration of antitoxin in the blood occurs immediately, whereas after intramuscular injection it occurs in 24 hours, and after subcutaneous injection the maximum concentration is not present for three days.[1] Six hours after an intravenous injection of serum there is ten times more antitoxin in the blood than after subcutaneous injection of the same amount, and 24 hours after intravenous injection there is twice as much in the blood as would have entered it by the subcutaneous route.[2] For these reasons, in toxic cases, the major part of the serum required is injected intravenously for immediate effect, and a relatively smaller amount is given intramuscularly at the same time. The position must be reviewed after 12 hours, and further doses given if required.

This method of treatment differs from standard teaching only in the total amount of serum given. Park's view (1921), based on laboratory and statistical evidence, is that "amounts of antitoxin beyond 25,000 units in a child and 50,000 in an adult, are absolutely unnecessary and useless, and that an initial dose of 10,000 units in a child and 20,000 units in an adult is probably sufficient for the whole course of the disease."[3] Goodall states (1928) that in his experience any amount of serum over 30,000 units, even when spread over two or three days, is wasted.[4] Our practical experience of the past year is in direct opposition to these views. Since we commenced this work we have learned with great interest that V. Bie, of Copenhagen, working on similar lines, has been using doses up to 200,000 or even 300,000 units since 1920. We are indebted to him for sending us particulars of his results for the year 1927, from which it appears that in a series of 1456 cases admitted to his hospital the death-rate was 1·3 per cent. These figures exclude laryngeal cases and patients dying within 24 hours of admission. He divides his cases into eight groups, giving the mortality in each group, and states (in a personal communication) that the death-rate in each group and the total death-rate have remained practically unaltered since he began to use the large doses.

Reactions following Intravenous Serum.

In Group A 11 cases out of 27, and in Group B 19 cases out of 37, receiving intravenous serum had an allergic reaction within half to three hours of the injection. The reaction is generally alarming and includes rigor, pallor, prostration, weak pulse, cyanosis about the lips, anxious staring expression, and pyrexia from 104° to 107° F. It lasts, as a rule, only a few minutes, and is followed by sweating and gradual return to the status quo. It is now treated prophylactically. If necessary, adrenalin, up to 2 c.cm. intramuscularly or 1 c.cm. intravenously, may be injected during the attack. Generally 1 c.cm. intramuscularly is sufficient. We have had no fatality from this reaction, nor has Bie in eight years' experience, but he nearly lost one adult, and considered that he saved the patient by injecting 1 c.cm. of adrenalin intravenously after 2 c.cm. intramuscularly had failed to relieve the condition. On account of this experience, Bie does not now give more than 50,000 units intravenously at a time—i.e., 50 c.cm. of the serum which he uses. We have, however, given as much as 140,000 units intravenously in a single dose, with no reaction whatever, while in another case a dose of 8000 units intravenously was followed by a rigor. The reaction seems to bear a lesser relationship to the size of the dose than to individual idiosyncrasy.

Serum rashes were very common in the first or second week but gave no cause for anxiety.

Isolation Hospital, Leicester.—Particulars of verified cases of diphtheria discharged or died during period April 1st, 1927, to March 31st, 1928.

—	A. Malignant or severely toxic.	B. Moderately toxic.	C. Moderate and mild.	Laryngeal.	Total.
Cases	27	52	214	7	300
Percentage of cases in each group	9	17·33	71·33	2·33	—
Av. dose of serum (antitoxin units)	I.V. 71,000 I.M. 31,000	I.V. 19,000 I.M. 19,000	14,500	I.V. 22,000 I.M. 29,000	—
Paralysis—					
Palate	10	4	3	0	—
Slight cardiac.	8	12	24	2	—
Severe ,,	6	1	1	3	—
Immediate serum reactions	11	19*	—	—	—
Deaths	6	nil	nil	2	8
Percentage of deaths in each group	22·2	nil	nil	28·6	—

*37 had I.V. Serum.

1. Death due to diaphragmatic paralysis, 43rd day.
2. Hæmorrhagic diphtheria: cardiac vomiting, &c., 11th day.
3. Hæmorrhagic diphtheria: cardiac paralysis, 5th day.
4. Hæmorrhagic diphtheria: cardiac paralysis, 4th day.
5. Cardiac vomiting, &c., 7th day.
6. Early cardiac failure, 3rd day. Laryngeal case.
7. Hæmorrhagic diphtheria: died 1¾ hours after admission.
8. Early cardiac failure: 3 hours after admission (membrane extending to bronchi). Laryngeal case.

Complications of Diphtheria in this Series.

The intensive method of serum treatment reduces not only mortality but also complications, especially the more serious forms of paralysis. In Group A (27 cases) the six who died had, as would be expected, severe paralysis of the heart. Of the remaining 21 cases only eight showed signs of the slighter forms of myocarditis, including extrasystoles and partial heart-block, and only ten had palatal paresis, while ciliary paresis and paresis of limbs were still rarer. Cardiac vomiting and paralysis of swallowing are now extreme rarities in these wards. Considering the extremely severe toxic condition of the cases in Group A on admission, this record is very favourable. In Group B, comprising 52 cases, 37 had intravenous serum and 15 had intramuscular serum only. Of the former seven had slight cardiac palsy (from which all recovered) and one had palatal paresis. In the 15 intramuscular cases there were six cardiac and three palatal pareses, a considerably higher incidence of paralysis than in the intravenous cases. The relative infrequency of severe paralysis greatly lightened the nursing in the convalescent stage. The difference in the actual work of the wards is quite marked. All the anxiety occurs in the acute stage or within the first two days, and after that things go smoothly.

Another way of estimating the effect of the treatment is to consider the average duration of residence in the hospital of recovered cases in Group A. This amounted to 70 days. All who are familiar with the painfully slow recovery of the survivors of the Group A type of patient under the older method of treatment know that it often involves four to six months' residence in hospital.

One of the most remarkable features of our diphtheria wards during the past year has been the rapidity with which almost every patient regained brightness of demeanour and outlook. Finally, in only one of the cases treated by large doses of serum intravenously did the carrier state occur. In this case only out of 64 cases receiving intravenous serum was departure delayed from hospital owing to persistent positive swabs. This, however, may be mere coincidence.

Objections to the Intensive Method.

Three main objections may be urged against the intensive serum treatment of diphtheria. These are: (1) expense; (2) additional work, particularly to the medical staff; and (3) danger from allergic reaction. It must be admitted that the annual increase in serum costs has been about £300 in the Leicester Isolation Hospital. Against this must be placed the saving in life, represented by a reduction of mortality from 9·3 per cent. to 2·6 per cent., and also the saving effected by the curtailment of the period of hospital treatment and lessened nursing costs. This in itself is probably sufficient to balance the additional cost of the serum. Toxic diphtheria should be regarded as an acute emergency, like a gangrenous appendix or a perforated gastric ulcer. It requires immediate expert medical attention and generally takes up half an hour of the doctor's time. It cannot properly be left to nurses, or even to medical men who merely give a haphazard subcutaneous injection of serum, which is equivalent to postponing operation on a gangrenous appendix for three days. The danger from the allergic reaction can be fairly met by prophylactic treatment and the use of adrenalin or pituitrin.

References.—(1) J. Morgenroth and R. Levy (1912), quoted in Med. Res. Council Report on Diphtheria, 1923, p. 257. (2) W. H. Park (1921) quoted in Manual of Infectious Diseases, London, Claude B. Ker, p. 431. (3) Ibid. (4) E. W. Goodall: A Text-book of Infectious Diseases, London, 1928, p. 197.

PAYING PATIENTS AT NEWCASTLE-ON-TYNE.—The annual report of Newcastle-on-Tyne Throat, Nose and Ear Hospital records that 12 months ago, owing to lack of support, some of the beds had to be closed. Rather than keep the beds unoccupied it was decided to use them for paying patients, and as a result they have been fully occupied.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN.—At the annual meeting of this hospital the Earl of Chesterfield, the President, stated that the work was being carried on under makeshift conditions, in a private dwelling which had been adapted and had long been outgrown. There are only 33 beds, whereas at least 50 are needed, together with accommodation for private patients and young children, and space for using the latest scientific methods. In 1927 the 229 in-patients stayed on an average 41 days. The hospital owns in the Uxbridge-road abundant freehold ground for building, but lacks means.

INFLAMMATIONS AND FISTULÆ OF THE SALIVARY GLANDS

AND THEIR TREATMENT.*

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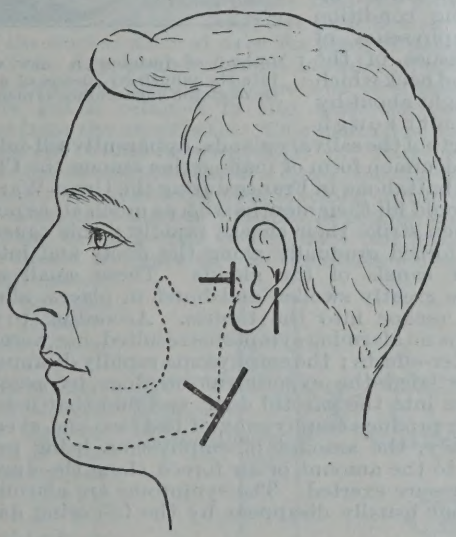
THE parotid, submaxillary, and sublingual glands are all developed from the lining epithelium of the primitive mouth in essentially the same manner. The primordium of each gland is originally a solid cord of cells growing from the epithelium into the underlying mesenchyme. The cords branch and subdivide, lumina appear, and the apices of the terminal ducts finally become dilated to form acini. The proximal portion of the original outgrowth becomes the main duct. The rudiment of the parotid appears in embryos of 10 mm.—that is, about the sixth week of intra-uterine life. It commences near the angle of the mouth in the upper alveolo-labial sulcus, grows backwards over the outer aspect of the masseter muscle, the external carotid artery, the temporo-maxillary vein, and the facial nerve; it finally expands in the recess between the lower jaw and the meatus and mastoid process. The submaxillary and sublingual glands appear later as outgrowths from the epithelium lining the alveolo-lingual groove in the floor of the mouth, at about the 11 and 12 mm. stages, that is about the seventh week of fœtal life. Whether the salivary glands are derived from ectoderm or entoderm is a question to which o certain answer can be given. If all structures developed from epithelium covering the maxillary and

FIG. 1.



Incisions used in the treatment of suppurative parotitis.

mandibular arches are ectodermal in origin, then the parotid glands, anterior part of the tongue, and the floor of the mouth and presumably also the submaxillary and sublingual glands, are derived from ectoderm, although some authors contend that the last named are entodermal. Mucin cells do not appear until the sixteenth week of fœtal life.

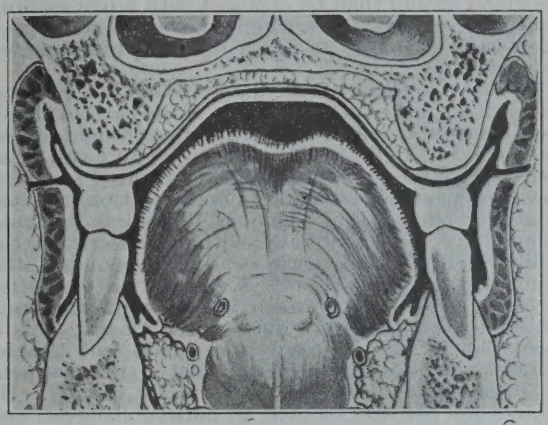
Complete absence of the salivary glands is a very rare condition. Xerostoma or dry mouth may occur in children and adults, occasionally in several members of the same family. This is not due to absence of the salivary glands, but to suppression of the glandular secretion.

* Abstract from Erasmus Wilson lecture delivered at the Royal College of Surgeons of England on Feb. 22nd, 1928.

Suppurative Parotitis.

This condition is, in my experience, most frequently met with in the insane, especially in those who have to be forcibly fed by the mouth or nose. These patients always have dry mouths, even when food is being administered. There is a definite lack of

FIG. 2.



Section through the mouth showing the relation of an upper denture to the parotid duct on each side.

psychical juices and of appetite, and indeed a definite feeling of repulsion for food. Infection reaches the parotid via Stenson's duct, and the first sign is usually swelling and fluctuation of the gland. General resistance on the part of the patient is so poor that the temperature and pulse exhibit very little variation from normal. If early incisions are not made the pus finds its way to the surface by bursting into the external auditory meatus at the junction of the osseous and cartilaginous portions. These cases are nearly always fatal unless free incisions are made into the gland. The gland itself undergoes necrosis and large sloughs are formed; these should always be removed.

Cope [1] reported seven cases of acute necrotic parotitis which occurred in debilitated soldiers in Baghdad during the extremely hot summer of 1917. These cases appear very similar to those which occur in mental institutions in this country. Early free incisions are imperative; mere puncture of the gland or probing it with sinus forceps is useless. The incisions advocated by Legg and Cope are very useful and allow of free drainage (see Fig. 1). Even when drainage is established the mortality is high, mainly owing to the lack of resistance. The administration of rectal and subcutaneous saline is impossible in mental cases. The author has seen ten cases among patients suffering from a depressed confusional state associated with delusions. Of these eight died.

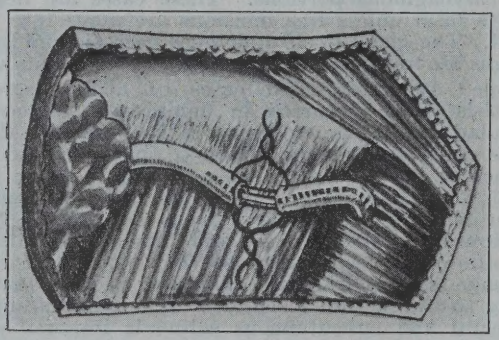
Post-operative Parotitis.

This is now becoming rare, and as its pathology is known it should disappear entirely. In 10,210 operations performed at King's College Hospital between 1900 and 1910, 32 cases (0·313 per cent.) of parotitis occurred, all after laparotomies, while in 17,585 operations performed at the same hospital between 1918 and 1927 there were 18 cases (0·102 per cent.) of parotitis. This reduction is due to the fact that gastric and abdominal cases are more carefully prepared, and that rectal saline, with or without potassium bromide, is administered in almost every case. Further, oral sepsis is now treated before any abdominal operation is contemplated, while before 1910 oral sepsis was neglected and dental treatment was almost unheard of in the wards of a hospital. Wagner,[2] writing in 1904, stated that the mortality of post-operative parotitis was 30 per cent. In my first series (i.e., 1900 to 1910) the mortality was 37·5 per cent., while it has dropped in the second series (i.e., 1918 to 1927) to 16·6 per cent. This

reduction is due to earlier operative interference in the way of incision and drainage. Incision should not be delayed until fluctuation can be elicited. It is only in the later stages of suppurative parotitis that fluctuation can be made out; this is due to the fact that the parotid is encased in a very firm capsule derived from the cervical fascia, and the texture of the gland is very firm. A ⊥-shaped incision should be made and the skin and parotid capsule incised; the gland should then be explored with a pair of sinus forceps or a probe. A single ⊥-shaped incision is often sufficient, but at times multiple incisions are necessary.

The total amount of saliva secreted in the 24 hours has been estimated at 2000 c.cm. If the parotid glands are responsible for half of this, one gland would secrete 500 c.cm. in the 24 hours or just over 20 c.cm. in an hour. Thus there is a continuous stream of secretion flowing down the parotid duct, and infection from the mouth is almost impossible in normal individuals. Should any factor interfere with this secretion the liability to infection increases. There can be little doubt that the vast majority of cases of post-operative parotitis are caused through infection passing from the mouth via Stenson's duct to the gland. This is borne out by the figures I have given and also by Fenwick's [3] results published in 1909 of the treatment of 300 cases of hæmatemesis by rectal feeding. He allowed his patients to suck an indiarubber teat, and did not have a single case of inflammation of the parotid gland. Rolleston and Oliver [4] found that in the medical treatment of 1000 cases of gastric ulcer the percentage of parotitis in the cases which are treated by oral starvation is 4·5 per cent., while the percentage is only 0·4 per cent. in the cases which are allowed fluid by the mouth. Fisher, of Ohio,[5] however, considers that post-operative parotitis is hæmatogenous, and that the predisposing factors are cachexia and malnutrition, causing a lowering of

FIG. 3.

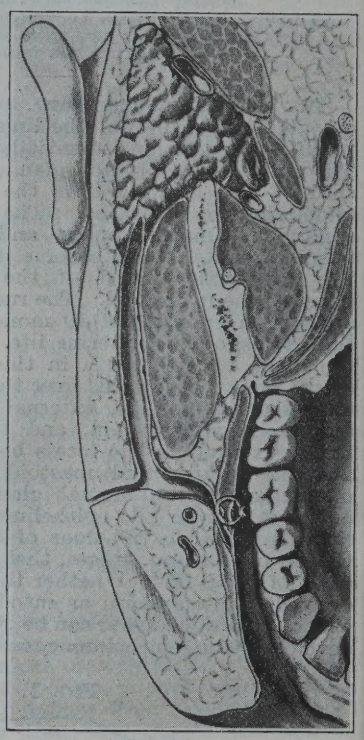


Method of suture in cases of recent injury to the parotid duct. A piece of silkworm gut acts as a dowel.

the patient's resistance. He also believes that "the secretion of the gland is under the influence of nerve stimuli, and that the incidence of post-operative parotid involvement is neurologically dependent upon surgical shock or inhibition of the secretory and trophic fibres from higher psychic centres." This opinion does not seem to me to be physiologically sound, as the secretion of the parotid is probably dependent on two factors only: nervous and chemical stimulation. That the second exists is proved by the fact that if the nerve supply of the gland is cut off secretion still continues, a so-called paralytic secretion which is the result of chemical stimuli (vide infra).

Occasionally unilateral or bilateral parotid swellings are due to a large upper denture which causes irritation of the gums and obstruction of the orifice of Stenson's duct. The first case that came under my observation was a woman aged 45 who had an upper denture fitted, and after wearing it for two days came up to hospital complaining of a swelling of the face and limitation of movement of the jaw. Her history was that the swelling began during breakfast and gradually increased in size. Distinct lobulation of the parotid gland could be felt, and Stenson's duct could easily be traced across the cheek. The orifice of the duct in the mouth was difficult to find, but while looking for it and at the same time pressing on the duct a plug of mucus was expelled into the mouth; this was followed by a flow of saliva and the disappearance of the parotid swelling. My curiosity was aroused by this case, and I looked up the literature and found that Jardet [6] recorded four cases occurring in adults in 1920. The condition is generally due to a badly-fitting denture (Fig. 2) which is not cleansed daily. The remedy is a properly fitting denture combined with the use of a potassium chlorate mixture, as this salt is excreted via the saliva.

FIG. 4.



Method of forming a new opening into the mouth by means of a suture through the buccal mucous membrane.

Fitzwilliams [7] has recorded an interesting condition of emphysema of the tissues of the face and neck which is brought about by inflation through the ducts of the salivary glands. Apparently self-inflation was a common form of malingering among the Chinese labour battalions in France during the Great War. The men would fill their mouths with as much air as possible and then strike their cheeks rapidly; this caused air to be forced gradually along the ducts and into the smaller canals of the glands. These small canals became greatly swollen and burst in places, allowing air to escape into the tissues. According to Fitzwilliams no alarming symptoms resulted, nor were there any after-effects; the emphysema rapidly disappeared. I have tried the experiment on dogs by passing a cannula into the parotid duct, and find that it is very easy to produce emphysema of the face and even half the body, the amount of emphysema being proportional to the amount of air forced along the duct and the pressure exerted. The symptoms are alarming at first, but usually disappear by the following day.

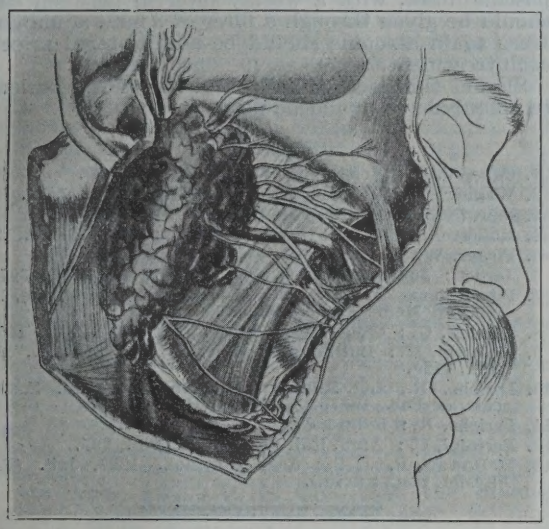
Salivary Fistulæ.

The only fistulæ of practical importance are those in connexion with the parotid and its duct. Fistulæ of the submaxillary gland tend to heal of their own accord; the rare cases which do not are easily treated by excision of the gland. Parotid fistulæ may be divided into two groups: (1) fistulæ of the duct, (2) fistulæ of the gland.

Fistulæ of the parotid gland and duct are most frequently caused by injury or suppuration around a calculus. Operations for removal of glands in the upper part of the neck may cause injury to the lower part of the parotid. A small fistula may result which tends to heal at once; if, however, the wound becomes infected a permanent fistula invariably results. The nearer fistulæ of the parotid are to the gland the more difficult they are to cure. They never tend to heal

spontaneously, and the portion of the duct in front of the fistula frequently becomes stenosed and sometimes obliterated. Should the fistula be situated in front of the masseter muscle operation will often cure. In recent cases, such as a stab injury, the wound should be opened up and the two ends of the duct isolated.

FIG. 5.



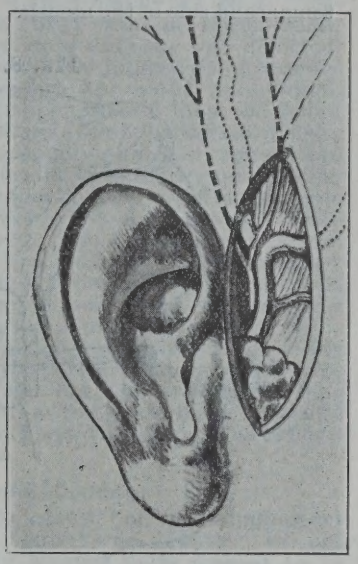
Dissection of side of face showing the relations of the facia nerve to Wharton's duct.

A piece of stout silkworm gut is passed from the mouth through the orifice of Stenson's duct and out on to the face; it is then passed into the proximal portion of the duct and thus acts as a dowel. The wall of the duct is sutured over the piece of silkworm gut, and the skin wound closed. In order to prevent a clot forming in the duct at the line of suture the silkworm gut is retained in situ until the patient recovers from the anæsthetic. This method is only of use when the wound is recent (Fig. 3). Tees [8] advocates the use of catgut to act as a dowel, but the catgut swells and may cause complete blocking of the duct. If in a recent case there is difficulty in getting apposition of the divided ends of the duct the proximal portion should be ligatured; in the absence of sepsis this will cause atrophy of the parotid. If, however, infection is present septic parotitis will follow. Treatment by the ligature method is far from new and has recently been revived by Morestin[9] in France.

In old-standing cases of premasseteric fistula the following procedure will sometimes suffice. A straight needle threaded with silk is passed through the fistula into the mouth; the needle is then unthreaded and the piece of silk outside the mouth is threaded on to it. The needle is then inserted through the fistula into the mouth a second time. The two ends of the silk are then tied in a knot. The included piece of tissue which is strangulated by the suture dies and sloughs, and by this means an opening is made into the mouth. As the parotid secretion has now a free vent into the mouth the fistula heals (Fig. 4).

Fistulæ of the parotid duct which are situated in the proximal part—namely, over the masseter muscle—are, as may be imagined, very difficult to cure, and nearly 30 different operations have been devised. Most of them leave considerable scarring on the face, frequently damage the lower branch of the facial nerve, causing paralysis of the muscles at the angle of the mouth, and rarely cure the condition (Fig. 5). To my mind there is only one justifiable procedure, and if this fails, the secretion of the parotid should be cut off by dividing the auriculo-temporal nerve. The procedure is an old one, but is much neglected at the present day, when operative interference for every condition is carried out only too frequently. By means of a small fine malleable probe which is passed from the mouth along the duct and out of the fistula on to the face, a piece of silk is attached and drawn out on the face. To the end of the silk is attached a fine piece of drainage tubing, and this is drawn out of the fistula, leaving one end in the mouth while the other is projecting on the face. Saliva may find its way along the side of the drainage-tube into the mouth. After a few days the drainage-tube is drawn so far into the mouth that it no longer projects from the fistula. Finally after a week it is withdrawn altogether. In some cases the result of this method is admirable and the fistula remains completely closed; should infection of the duct be present, however, the rubber tube may cause parotitis.

FIG. 6.



Method of exposing the auriculo-temporal nerve. It can be seen lying just behind the superficial temporal artery.

There is only one certain method of closing a fistula of Stenson's duct when sepsis is present, and that is by division of the auriculo-temporal nerve. This method was first advocated by Leriche[11] some 15 years ago. Since that time several surgeons, among whom Morestin[9] and Ferraini[12] may be mentioned, have given this method a good trial with excellent results. In the seven cases of fistulæ of Stenson's duct that I have treated by division of the auriculo-temporal nerve I have used a modification of Leriche's method. Instead of a horizontal incision in front of the external auditory meatus, a vertical incision is made. This gives much better exposure, and the superficial temporal artery is not so liable to injury. As the nerve is situated immediately in the deep aspect of the artery, if the latter structure is retracted it can easily be exposed (see Fig. 6); the nerve is then divided with a knife, the proximal portion grasped with a pair of Spencer-Wells' forceps, and as much of it as possible avulsed by firm traction. The fistula healed quite quickly, and after a month the amount of secretion coming via Stenson's duct into the mouth

FIG. 7.

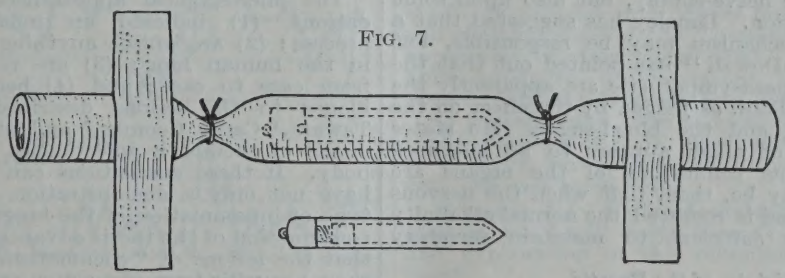
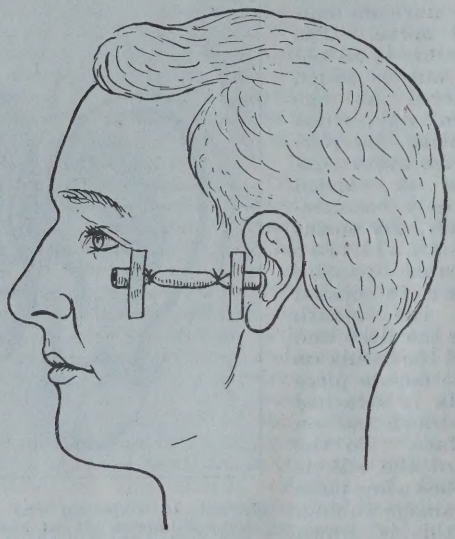


Diagram of platinum-iridium torpedo.

was reduced by one-half. Even division and avulsion of the proximal end of the auriculo-temporal nerve does not cause complete cessation of secretion of the parotid gland. Further, the secretion, which may be termed a paralytic secretion, persists for years, the longest period of which I have a record being six years.

The presence or absence of secretion from the gland is investigated by applying a little citric acid to the tongue and side of the mouth. If the gland is secreting

FIG. 8.



Method of applying radium to parotid fistula.

a drop of saliva can always be seen at the papilla on the inside of the cheek. The secretion after division of the nerve is always much less than that of the other side, but the methods of observation in human subjects are not very accurate. One would hesitate to place small cannulæ into the orifices of both parotid ducts and try and collect the saliva therefrom; the risk of infection and its aftermath, septic parotitis, is too great. The most likely cause of the paralytic secretion is chemical stimulation. It may therefore be assumed that the normal secretion of the parotid is not only dependent upon the secreto-motor nerve-supply, but also upon some chemical stimulation. Langley has suggested that a local nervous mechanism may be responsible, but more recently McDowall [13] has pointed out that the activities of the parasympathetic are apparently the same as that of alkali, as judged by the effect on the heart, the pupil, and the blood-sugar. He states that this effect of alkali appears to be increased when the nervous connexions of the organs are increased. It may be, then, that when the nervous control of the gland is removed the normal alkalinity of the blood is sufficient to maintain secretory activity.

Fistulæ of the Parotid.

Fistulæ of the parotid gland tend to heal of their own accord. For those which do not the two methods of treatment are: (1) Radiotherapy, and (2) avulsion of the auriculo-temporal nerve.

Radiotherapy rarely fails to cure and is quite simple; 250 mg. of radium is enclosed in a platinum iridium torpedo, the thickness of which is 0·5 mm. The torpedo itself is encased in another platinum tube, 0·5 mm. in thickness, in order that the beta radiations may be cut off. The platinum tube is then placed in a rubber tube to facilitate its application (Fig. 7). The fistula and its surrounding parts are covered with lint, in order to cut off any secondary radiations from the metal filters (Fig. 8). A four-hour application is usually sufficient, but should the skin be somewhat thickened and indurated from the constant discharge of saliva, a six-hour application is advisable. Whatever length of application is used, it is advisable to give a hypodermic injection of atropine (gr. 1/100) half an hour beforehand; this lessens the secretion of the gland during the time the radium is being applied.

X rays have been used in the treatment of parotid fistulæ but are not so constant in their action. Three pastille doses, with a weekly interval between each, should be given through a filter of 3 mm. aluminium. Here again atropine should be administered prior to each treatment.

Should this method fail, avulsion of the auriculo-temporal nerve should be performed.

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THE RHEUMATIC LUNG.

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(WITH COLOURED PLATES.)

THE term "Rheumatic Pneumonia" is an old one and was more in vogue in the medical literature of a past generation than of to-day. Possibly this is because the acute rheumatic fever of adults is now less common.

The condition I am about to describe contrasts so much clinically with what we usually know as pneumonia, that I prefer to use the simpler term, "rheumatic lung."

The microscopical appearances of these consolidations (1) indicate an inflammatory reactive process; (2) are unlike anything hitherto described in the human lung; (3) are remarkably constant from case to case; and (4) bear a strong resemblance to the lesions described by Aschoff and Tawara,[1] Carey Coombs,[2] and others, as pathognomonic of rheumatic infection in other parts of the body. If these contentions can be established, we have not only a demonstration of an entirely new type of inflammation of the lungs, but also a strong confirmation of the thesis advanced by Carey Coombs that the lesions of "rheumatism" (childhood type) show a specific form of reaction and therefore indicate probably a specific virus.

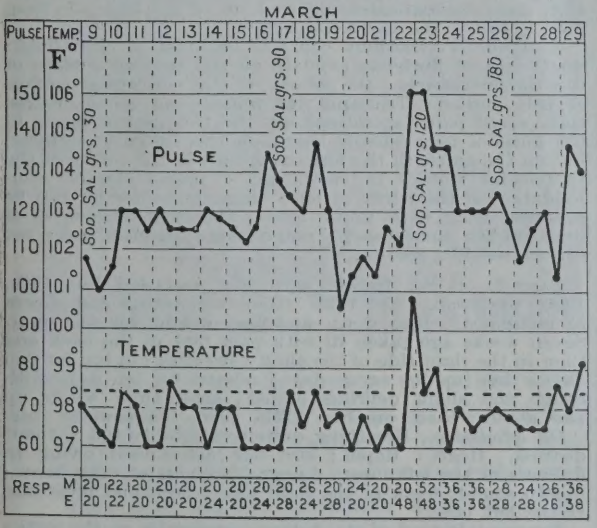
During the past two and a half years I have obtained post-mortem material from six of my patients who have displayed this peculiar consolidation of the lungs. Not all were children, their ages being respectively 7, 8, 9, 13, 26, and 33; but all gave evidence of active rheumatic infection, with the possible exception of the woman of 33, who had mitral stenosis, but whose heart muscle was unfortunately not examined to determine the presence or absence of Aschoff's nodules.

I propose to deal first with the general clinical aspect of this condition, then to describe the naked-eye and microscopical appearances of the lungs, and finally, after a brief description of the individual cases, to summarise and discuss my conclusions.

General Clinical Considerations.

Those who have experience of disease in childhood are familiar with certain more or less extensive patches of dullness which are liable to appear over the back of the chest in children suffering from active rheumatic carditis. They appear insidiously, being frequently unaccompanied by pyrexia or noticeable increase of respiratory-rate, and are therefore only detected by routine examination. Cough is sometimes present at the onset, but is of a mild variety and attracts little attention in a patient already seriously ill. The dullness sometimes appears quite rapidly, extending perhaps over the greater part of one lobe in the course of two or three days; it then may remain stationary over a long period lasting into months, and, finally, may clear up as rapidly as it began. The breath sounds over the dull area are often loudly bronchial, but there is every grade between this and muffled or completely absent respiratory sounds. During the quiescent stage no adventitious sounds are heard, but if the stage of onset is observed a few soft crepitant sounds are not infrequent.

It has been held by most observers that this dullness is present at the left base only, and, following the old observation of Bamberger [11] that dullness in this situation is common with pericardial effusion, the condition is usually considered to be a collapse of the lung due to the pressure of an enlarged heart or distended pericardial sac. My own observations, however, spread over a number of years, directly contradict the belief in the immunity of the right lung. It is true that the dullness usually begins at the left base and is most intense in that situation, but careful percussion will often reveal slighter dullness and altered breath sounds on the other side, and in a few cases the dullness is most intense on the right. It was, in fact, this last observation that first made me seriously doubt the current theory of collapse, and it will be seen from the post-mortem reports of the six fatal cases that in all of them the right lung was affected, and to about the same extent as the left. The reason for the earlier appearance and greater frequency of



left-sided affection will be discussed at the end of this paper.

Although this condition appears only in those severely affected by rheumatism, yet it does not usually appear to add much to the gravity of the prognosis, and the great majority live for the dullness to clear up. The cases recorded in this paper showed a much more rapid extension of the dullness than is seen in the average case, and the symptoms were naturally more acute, but even in these it was remarkable how little the temperature and respirations were affected by the onset of the lung consolidation.

Take, for instance, the case of W. W. (see Chart), who had been in bed, under observation, for six weeks previous to the first appearance of a small patch of dullness at the angle of the left scapula on March 25th. Although the dullness increased at such a rate that by the 29th the whole of both sides, back and front, appeared to be dull, yet the respirations were for the greater part of these four days between 24 and 28 per minute, and the pulse-respiration ratio was approximately 4½ to 1. The temperature showed a brief rise on March 22nd, three days before any lung dullness was detected, but during the period when the dullness was so rapidly extending, the temperature was mostly subnormal. With regard to the temperature it must be noted that most of the patients were taking salicylate of soda, and that E. W., who was not, showed a temperature quite comparable to that of an ordinary pneumonia. In spite of this she, in common with the other patients whose temperatures were low, showed a p./r. ratio of approximately 4 to 1. The respirations were not only slow but there was scarcely any respiratory distress throughout the series of cases; the one definite exception being the case of I. D., in whose pericardium there was half a pint of fluid.

Cyanosis was very noticeable during the last day or two of life in those patients whose lungs were nearly solid throughout, but the amount of lung solidification in proportion to the degree of intensity of respiratory symptoms was throughout the series a surprising phenomenon.

Morbid Anatomy.

Macroscopical.—The extent of the pulmonary consolidation was a remarkable feature. In one case (W. W.) the only aerated parts seemed to be a strip along the anterior border of each lung, and most of the right middle lobe. In another (I. D.) all parts of both lungs were affected, but the upper lobes appeared to contain some air. In another (E. C.) the right lung was completely solid throughout, but the left, though very largely solid, floated in a submerged position in water. In another (A. B.) three-quarters of the right lung and a quarter of the left lung were solid. The other two showed consolidation of both lower lobes. There was no sharp demarcation between solid and air-containing lung.

The appearance of the affected parts was quite characteristic and unlike that seen in any other form of pneumonia. Its consistency was not unlike that of solid indiarubber, very tough, and non-friable on the cut surface. The colour, on section, was a shade of purplish red, quite homogeneous in tint and showing none of the "granite" or "marbled" appearance of other pneumonias. Scraping with the knife produced no exudation. In one case the bronchi exuded a blood-stained fluid on pressure.

So characteristic were the naked-eye appearances that in the case of E. W. the condition was recognised at once by our pathologist, although she had seen only one case previously.

Microscopical.—Before describing the microscopical appearances I will quote from Coombs' [3] description and explanation of the submiliary nodules of the heart.

"The nodules consist of a groundwork of fibrin, surrounded and interrupted by various cells. Of these, the most important are certain large cells which form the characteristic feature of the nodule; there are also leucocytes and plasma cells."

"The characteristic large cells vary a little in shape according to the shape of the space in which the nodule develops; in rounded nodules the cells are often globular, but even in such they may be fusiform, and this is the form they tend to take. That they are soft is shown by their taking shape from one another so as to give flat sides and quadrilateral outlines to each. The largest cell is of such a size that, measured from pole to pole, it is equal to one-third or one-quarter of the diameter of the microscope field, as seen with 1000 magnification. Its cytoplasm, which is very finely granular, takes both basic and acid dyes readily, so that the cell is a dark object in the field. In some the cytoplasm looks opaque and the cellular outline is apt to

be lobular; such cells are probably being destroyed by toxins, perhaps by those which call them into being. There may be as many as seven nuclei in one cell, apparently without any plan of arrangement; though as many of the cells are so narrow that they can carry but one nucleus abreast, they lie in a sort of chain along the long axis of the cell. The chromatin thread of the nucleus stains sharply with hæmatoxylin, each nucleus appears as a space bounded by a thin black line and clear centrally except for several sharp black dots which represent cross-sections of the chromatin thread.

"The stages of the tissue reply to irritation by the *Streptococcus rheumaticus* would appear to be as follows: First, the endothelia of the smaller blood-vessels and lymphatics proliferate; this is manifested in partial or complete occlusion of vessels, with or without thrombosis, in the dissemination of "endothelial leucocytes," which are mainly collected in perivascular foci, and in the building up of new capillaries. Second, the perivascular connective tissues display a fibroblastic reaction, especially around the newly formed capillaries. Third, leucocytes arrive in the disturbed area; in most areas the polymorphonuclears are represented but sparingly, but the more severe the attack, the more likely they are to appear, and in some spots they even dominate the picture, especially where large vessels are closed by inflammatory thrombosis. The usual appearances, therefore, are those of a blood-borne infection of a virulence so moderate that it is for the most part dealt with successfully by the first line of defence—the vascular endothelia."

On comparing under the low power sections of the lungs from my cases with those from a lobar or broncho-pneumonia, certain contrasts are seen at once.

PLATE I. is from a typical broncho-pneumonia and shows large alveolar cavities with thin walls, the cavities being nearly filled with a mass of fibrinous exudate and polymorph leucocytes slightly shrunken away from the walls, and such red blood corpuscles as are present in the walls are nearly all contained within small vessels.

PLATE II. is a microphotograph from W. W. (Case 6). The alveolar walls are seen to be some 8 or 10 times as thick as in the former plate; the red blood cells are not contained within vessels, but are widely diffused among the other cells of the walls; the cavities of the alveoli are quite small and are encroached on by small outgrowths from the walls.

PLATE III. shows: (1) proliferation of the endothelium lining a capillary; (2) outgrowth of similar endothelial cells in all directions, so as to make it difficult to distinguish wall from cavity; and (3) general diffusion of red blood cells among the endothelial cells.

PLATE IV. enables us to see the cells which are in all parts of the section like those described by Coombs.

These cells form the immensely thickened walls and are seen budding out in little tufts into cavities of the alveoli. In some places the walls can be traced with fair ease, but in others, where apparently the process has reached a more advanced stage, the alveolar structure has been entirely replaced by masses of these cells, either packed closely together or drawn out into a syncytioid mass. Multinucleate cells are fairly frequent, though I have not found any cells with more than five nuclei. In all but one of my cases these endothelial cells form the vast majority of the structure, being mixed with only a few fibroblasts and polymorph leucocytes, but in one (J. J. C.) the polymorphs were quite numerous, though even here there was the same massive endothelial background on which the leucocytes were dotted. A still later stage of the process shows the endothelial cells beginning to form new blood-vessels. In one very acute case the mediastinal glands were enlarged and very red, and sections showed not only a notable vascularity but the invasion and replacement of considerable areas of lymphoid structure by endothelial cells of the same type. In cases where the heart muscle was cut, typical Aschoff's nodules were found.

The following is the description kindly written for me by Dr. Clara Tingle, pathological assistant to the Sheffield Royal Hospital.

"Large endothelial cells are the predominating ones found in this condition. They are constantly present and in large numbers. The average diameter appears to about 4–6 times that of a red cell, but they vary according to the pressure put upon them by surrounding structures. The majority of these cells are mononuclear, the nucleus being equal in diameter to about one-third the diameter of the cell. Many cells, however, are multinucleated, there being in some instances as many as five or six nuclei per cell. In these "giant cells" the nuclei are separate from one another and are arranged irregularly within the cell. The nuclei always appear as a dark-staining ring with a central space, which often is unstained but which sometimes shows darkly staining dots. The cytoplasm stains deeply and is faintly granular. Sometimes carbon pigment is found within the cells. (I have not found any showing active phagocytosis to other cells.) In areas where these cells are fewer in number they tend to be wholly within the alveolar walls, causing thickening and distortion of these structures, but in areas where the change appears more advanced the cells lie in large numbers within the alveoli. They are accompanied by red blood cells and a few plasma cells, and the alveolar contents do not tend to retract from the walls during preparation of the section as they do in lobar or broncho-pneumonia. There are also found a few areas in which the lung structure is completely lost and is replaced by a mass of these cells separated only by red blood cells, plasma cells, and a few fibroblasts."

Individual Cases.

The following are short descriptions of individual cases:—

CASE 1.—I. D., male, aged 8. Admitted Dec. 9th, 1925; died Dec. 19th, 1925. Onset two months ago; pain in the left chest and back; sweating; frequent abdominal pain; occasional joint pain; always tired; dyspnœa on exertion; no sore throat.

On admission: Tongue furred; immense tonsils; muco-purulent discharge from the naso-pharynx; no nodules; no pallor. Heart: There is much visible pulsation; the left border 5 in. from the middle line; systolic and diastolic murmurs at the apex. Lungs: Crepitations and slight dullness at the left base.

Dec. 15th: Heart breadth 6½ in.; pericardial friction. 17th: Dullness and crepitations at right base. From this time onwards increasing respiratory distress and inability to lie on left side.

Pulse-rate: Varied from 120 to 145 throughout stay in hospital. Temperature: 100·4° F. on admission, slowly falling to normal on the 13th; on the 15th it rose again to 101·2° F., falling to normal on the 17th. Respirations: From Dec. 9th to 15th, 20 to 36 per min., the average being about 28. From Dec. 15th to 18th, 36 to 40 per min., and within the last 30 hours before death rising rapidly to 78. P./r. ratio approximately 4½ to 1 up to the 15th and from then 3⅔ to 1 to the day before death.

Autopsy.—Pericardium contains half-pint of clear fluid; small area of fibrinous exudate on the anterior surface of the right ventricle; the whole of the pericardial surface slightly dulled. Tricuspid and mitral and aortic valves show small pale vegetations, on the two former valves in the form of long narrow bands on the auricular surfaces, but on the aortic in the form of groups in the centre of the ventricular surface of each cusp. Lungs: Massive consolidation of the whole of both lungs, but some air can be squeezed from both upper lobes; the consolidation is of india-rubber consistency; non-friable; purplish red; cut surface not like granite.

CASE 2.—E. W., female, aged 26. Admitted Jan. 13th, 1926; died Jan. 17th, 1926. Had rheumatism and chorea in childhood. Run down and lost weight for one year. Seven weeks ago taken ill with pain first in the back and then in the right side of the chest; sweating; in bed for two days; then up for seven days; relapse for ten days with cough and slight delirium added; again three weeks up and about; then, on Jan. 12th, 1926, temperature rose.

On admission: Breathing quite comfortably and without distress. Heart: Rapid; size not determined owing to dullness of the left lung. Lungs: Dullness at both bases; breath sounds weak at the right base; bronchial breathing at the left base.

Progress: Spread of the dullness, especially on the right; bilateral friction; jaundice by the 15th; never any respiratory distress.

Pulse-rate from 120 to 150. Temperature from 101° to 105°. Respirations from 28 to 36; above 36 only during the last 24 hours of life. P./r. ratio approximately 4¼ to 1 during first three days; 3⅔ to 1 during last 24 hours before death.

Autopsy.—Pericardium: Fibrinous pericarditis with recent adhesions; hypertrophy of the left ventricle; old mitral stenosis; a few small pale vegetations over auricular surface of mitral valve. Lungs: A little fibrinous pleurisy at both bases; both lower lobes airless; upper lobes congested; bronchioles exude blood-stained fluid on pressure. The consolidated part india-rubber like; very tough; non-friable; homogeneous in colour.

DR. A. E. NAISH: THE RHEUMATIC LUNG.

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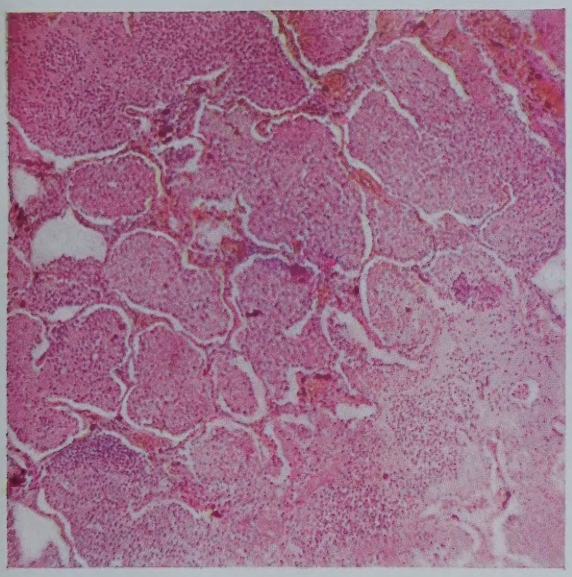

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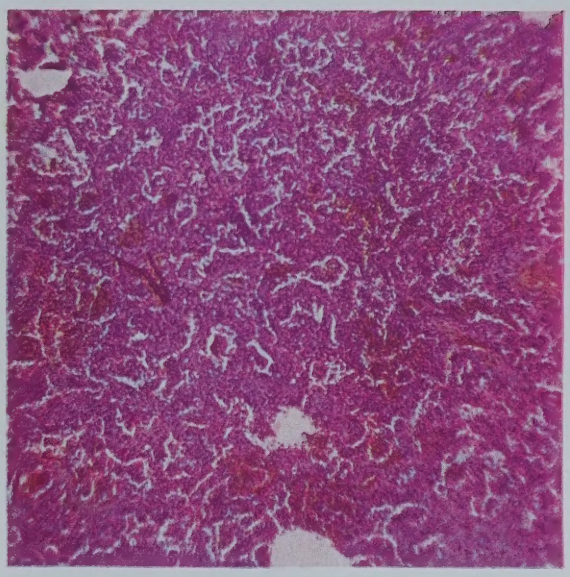

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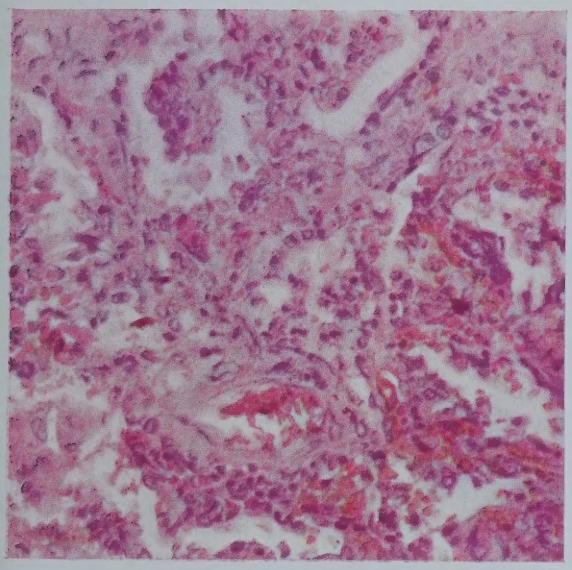

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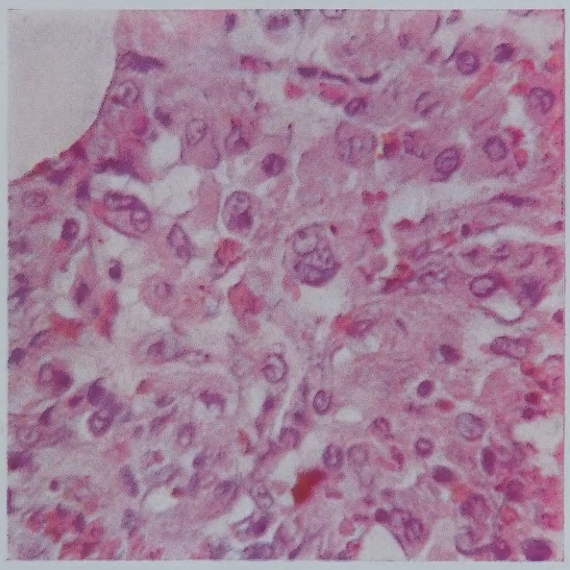

PLATE I. (× 60) is from a typical broncho-pneumonia and shows large alveolar cavities with thin walls, the cavities being nearly filled with a mass of fibrinous exudate and polymorph leucocytes slightly shrunken away from the walls, and such red blood corpuscles as are present in the walls are nearly all contained within small vessels.

PLATE II. (× 60) is a microphotograph from Case 6. The alveolar walls are seen to be some 8 or 10 times as thick as in the former plate; the red blood cells are not contained within vessels, but are widely diffused among the other cells of the walls; the cavities of the alveoli are quite small and are encroached on by small outgrowths from the walls.

PLATE III. (× 280) shows: (1) proliferation of the endothelium lining a capillary; (2) outgrowth of similar endothelial cells in all directions, so as to make it difficult to distinguish wall from cavity; and (3) general diffusion of red blood cells among the endothelial cells.

PLATE IV. (× 520) shows in all parts of the section the characteristic large cells described by Coombs.

CASE 3.—E. C., female, aged 13. Admitted March 13th, 1926; died March 20th, 1927.

December, 1926: Sore throat and pain in the knees; was in bed two weeks and afterwards was kept from school. Feb. 17th, 1927: Came to the out-patients' and was advised to stay in bed. March 7th: Much worse; weakness and pain in the knees.

On admission: Pallor. Heart: Dullness 1¾ in. to the right and 5 in. to the left of the middle line; systolic and diastolic murmurs at the apex. Lungs: No dullness detected.

March 18th, 1927: Vomiting; cyanosis; restlessness; pain; dullness at the left base; pericardial friction; liver very large. March 19th: Dullness at right and left bases, which subsequently increased rapidly.

Pulse-rate, 100 to 120. Temperature on first two days after admission, 98·8° F.; after that, never above 98·4° F. Respirations up to the 16th, 20 to 28, afterwards 22 to 40. P./r. ratio approximately 4½ to 1, except for a brief period about 24 hours before death.

Autopsy.—Pericardium: A little fibrinous exudate about origins of great vessels and less at apex; about 2 oz. fluid in sac. Heart: Muscle flabby and mottled; moderate dilatation; small vegetations at bases of aortic cusps and on auricular surfaces of mitral and tricuspid valves. Lungs, pleuræ: A little fibrinous exudate at right base; whole of right lung solid; sinks in water; tough, non-friable; non-granite-like. Left lung similar but less affected, many parts floating; consolidation not circumscribed.

CASE 4.—A. B., female, aged 33. Admitted March 31st, 1927; died March 31st, 1927.

History.—Rheumatic fever at 7 years old; heart affected; very delicate since; frequent aching of limbs; pneumonia in 1922. Dec. 31st, 1925, became ill with bilateral chest pain and cough; admitted on Jan. 3rd, 1926, showing widespread râles, friction at left base, and double bruit over the cardiac apex. The râles cleared up within a week, leaving a patch of dullness, bronchial breathing, and increased vocal vibrations at the left base, which in turn cleared after a few days. The temperature was never above 100, and for a good part of the acute stage was subnormal. Respirations after first two days, 20. After this she returned to her usual state of invalidism. For a few days before death more dyspnœic but not laid up, and she actually walked up to the out-patient department on the day of her death.

On admission: No notes of importance, owing to her rapid death shortly after admission.

Autopsy.—Heart: Dilatation and hypertrophy of right ventricle and right auricle; dilatation of the left auricle. Mitral valve sclerosed; button-hole orifice admitting one finger. Pericardium, normal. Lungs: Consolidation of the whole of the right lower lobe and one-third of the right middle lobe; slight consolidation at the left base; consolidated parts show rubbery consistency, toughness, non-friability, and homogeneity of colour.

CASE 5.—J. J. C., male, aged 9. Admitted Sept. 7th, 1927; died Jan. 28th, 1928. Three years ago had an illness called pneumonia, since then has had pain in the left chest; dyspnœa on exertion; listlessness; poor appetite; sweating. Lately, bumping of the heart.

On admission: Languid; pale; sweating. Heart: left border 5 in. from the middle line; double bruit at apex, the diastolic murmur being loud. Lungs: nothing abnormal detected. During September vomited from time to time.

Oct. 3rd, 1927: Nodules on occiput, right wrist, left elbow, and left external malleolus. No evidence of pericarditis or pulmonary consolidation. Looked very ill. Respiratory average about 31. Antistreptococcal serum given on Oct. 10th, 18th, 25th, and Nov. 2nd. Nov. 14th: Much better, nodules nearly gone. Through the rest of November and December very well.

Jan. 7th, 1928: Pain in knees and chest; 9th, vomiting; 11th, rash of raised red patches, heart dullness 2½ in. to right and 5½ in. to the left of the middle line; 13th, dullness at left base, no bronchial breathing; 16th, 17th, 18th, and 23rd, antistreptococcal serum; 20th, dullness at the right base. Temperature range, after the 7th, was usually 99° to 100° F., but there was a rise on the 7th to 101·4° F., and another between Jan. 12th and 17th to a maximum of 101·6° F. Respirations from 23 to 32 up to Jan. 24th, after this 32 to 36. Pulse-rate averaged 120. P./r. ratio approximately 4 to 1 up to last 48 hours.

Autopsy.—Heart: very large; largest diameter 7 in. Right auricle much dilated; other cavities moderately so. Pericardium adherent; no recent pericarditis. Lungs: Complete consolidation both lower lobes; india-rubber consistency; non-friable; purplish-red, not mottled.

CASE 6.—W. W., male, aged 7. Admitted Feb. 14th, 1928; died March 30th, 1928. Movements for past two months.

On admission: Acute chorea; pallor; wasting; indifference to surroundings; nodules on right occiput, each elbow, near metacarpo-phalangeal joints and on dorsa of both feet. Heart: Breadth 4 in., soft-blowing apical systolic murmur. Progress: Steady improvement; after 2½ weeks, better colour; scarcely any chorea; appears plumper; taking interest and chatting.

March 16th: Pulse-rate went up and the cardiac dullness was enlarged by 1 in. 22nd: Rise of temperature; heart-rate, 160; respirations, 52; vomiting; diastolic bruit at apex. 25th: Small area of dullness at angle of left scapula; crepitations; respirations, 36. 26th: Dullness increasing; respirations, 28. 27th: Dullness and crepitations at right base; respirations, 24 to 28. After this very rapid increase of dullness. P./r. ratio very seldom below 4 to 1.

Autopsy.—Heart: Moderate dilatation of the right ventricle, left ventricle, and right auricle. Valves: Aortic and mitral, vegetations in groups along the line mid-way between attachment and free edge; mostly white, but small hæmorrhagic points. No pericarditis; no increase of pericardial fluid. Lungs: A few ounces of fluid in either pleural cavity. Nearly solid; only right middle lobe and anterior free edges showing any air. Consolidation is of india-rubber consistency; non-friable; purplish-red; cut surface, not like granite. Mediastinal glands: The size of beans; very red; semi-soft. Liver; Large and fatty. Mesenteric glands: Similar to mediastinal.

Discussion.

The appearance of the lungs in these cases is apparently quite different from anything that has been hitherto described. Dr. Robert Hutchison informs me that over 20 years ago the pathologist at the London Hospital, Dr. Salaman, prepared sections from the lungs of a rheumatic case and found similar appearances, but that the slides were lost. Pichon and Lardé-Arthés [4] have described what they call "multiple pulmonary infarcts" in association with active carditis, which will be referred to in a moment. Coombs, Miller, and Kettle [5] have described a remarkable endothelial proliferation of the vessel walls in the lungs of rabbits which have been inoculated with virus from rheumatic cases. Apart from this I have been unable up to the present to find any precise accounts in the literature of pathological examination of these pulmonary consolidations.

These lung appearances are strikingly like those described by Coombs [3] in cardiac submiliary nodules, the main difference being that they suggest an earlier stage of development in which endothelial proliferation entirely overshadows fibroblastic reaction. It is also to be noted that in the lung preparations there is evidence of considerable effusion of red blood corpuscles from the damaged capillaries, whereas this is not a feature of the submiliary nodules. This, too, I take to be an indication of an earlier stage of development before absorption of cells has taken place. The highly vascular nature of the alveolar wall must also be taken into consideration in making a comparison with the rheumatic lesion in other sites.

In this connexion it is interesting to bring forward microscopical appearances from another case to indicate that endothelial proliferation and effusion of red blood cells are closely connected. A girl of 17 years (D. Q.), under the care of my colleague, Prof. Arthur Hall, died on Nov. 5th, 1925, with pericarditis and pulmonary consolidation. The greater part of the lung section showed an ordinary broncho-pneumonic reaction with the red blood cells contained in little groups within the capillaries, but in certain small portions of the slide there was obvious blood effusion, and here the endothelial proliferation was most remarkable, the large cells budding out in long strings.

At this point I should like to discuss the case recorded by Pichon and Lardé-Arthés.[4] The so-called infarcts, which were scattered about in an irregular fashion through the lungs and had no sharp margin or definite shape, were attributed by the authors to rupture of vessels by high pressure (it was expressly stated that embolism or thrombosis of vessels was carefully looked for without success). The microscopical appearances are recorded very briefly; merely the words "Les alvéoles pulmonaires sont remplis d'hématies." When this case is compared with some of my cases which were very definitely hæmorrhagic, and in one of which blood

could be squeezed from the bronchioles, it appears to me possible that a further examination of the sections might reveal in their case an earlier stage of the endothelial reaction to be at the bottom of the hæmorrhage. This seems to me especially likely, as the case showed a definitely febrile carditis, with Aschoff's nodules throughout the heart, and there was nothing in the notes to suggest very high venous pressure.

Another point that is worth discussing is whether the pulmonary consolidation in these fatal cases is the same as in the more familiar non-fatal cases. Careful consideration of the signs and symptoms of the two classes has led me to the belief that they are identical. There are obvious differences in intensity, but even the most acute display the same insidious onset and lack of disturbance of respiration up to the point when loss of aerating surface is extreme. In fact most of these pulmonary consolidations would have been missed during life had not my interest in the subject led me to frequent examination of the bases. Transition cases also are reported in the literature. Take, for instance, the small epidemic of six cases described by Cheadle [12] in 1888. In this are particularly noted the lack of cough, expectoration, and respiratory distress, but the inflammatory nature of the consolidation is indicated by a little rise of temperature, and the presence of some fine crepitant sounds on the day of onset.

Not all pulmonary complications of rheumatism are of the insidious type described above. Achard,[7] following Bernheim,[8] has distinguished three forms: acute general congestion, partial congestion, and latent congestion, but he does not particularise very carefully the respective cardiac states of the patients displaying these syndromes. Where high pressure is present in the pulmonary veins it is obvious that an important complicating factor cannot be excluded. My patient (A. B.), who had a fairly high grade of mitral stenosis, was in for so few hours during her fatal illness that no serious observations could be made; but a little more than a year before she had been under observation for a pulmonary complication. This started with bilateral pain, dyspnœa, cough, and cyanosis, and showed scattered râles all over both sides, but on this condition clearing up an apparent consolidation at the left base was left, the respiratory-rate being only 20. It seems to me likely that this left base consolidation was of the same nature as that which killed her a year later, and that the acute generalised signs and symptoms were produced at the onset of the specific rheumatic inflammation by reason of the high pulmonary venous pressure.

There comes now the question as to why the consolidation should so commonly start at the left base and in mild cases be confined to the region. Dr. Robert Hutchison and Prof. Langmead have suggested to me that it is by direct spread from the pericardium, the rheumatic organism having a tendency to transgress anatomical boundaries and spread by contiguity. The former has stated in one paper [6] that he has never found the condition except in association with active pericarditis.

A consideration of my cases shows that an active pericarditis was not always present in association with the consolidation; three out of the six had none. This I think renders the spread theory unlikely. For some time I thought that the pressure of a large heart and the consequent partial collapse of the left lung must be the factor determining the preference for this situation, but consideration of the very different sizes of the hearts in the affected cases has made me abandon this supposition.

My present position is rather to make a suggestion than to state a theory. It is now a well-known fact that the rheumatic reaction processes are most likely to be found in positions exposed to friction. Subcutaneous nodules appear in just those positions where the skin is liable to be rubbed over bony surfaces, and vegetations on the valves usually appear in positions where there is most chafing. I would suggest, then, that the large and rapidly beating heart does, by its local massage of the left lung, make that small difference which determines the seat of election. At the same time I would point out that the acute cases do not show any special predilection for one side, and I think that a careful clinical study of the more chronic cases will show that there has been an exaggeration of the unilateral incidence produced in our minds, probably by the suggestive influence of the collapse theory.

One of the difficulties which must be faced is how with so massive a change in the lung the normal parenchyma can be restored. The answer to this is bound to be speculative, but the remarkable power these endothelial cells have of regenerating new blood cells supplies a hint. In the older books the association of pneumonia and pleurisy with rheumatism was considered to be quite a well-established fact. A. E. Garrod,[9] in 1890, wrote a "Treatise on Rheumatism," in which he devoted a chapter to "rheumatic pneumonia," quoted statistics from a number of earlier authors, and made some very acute observations. Rheumatism then, however, was probably more common in adults and more acute in its manifestation, and, although these observations have great interest and value, it is necessary to cover the ground again and correlate physical signs and symptoms with what we have since learnt of the specific pathology of the condition.

There are other subsidiary questions which my sections serve, I think, to settle. For instance, Letulle, Bezançon, and Weil [10] have advanced a theory that the large multinucleate cells of the Aschoff nodule are derived from the muscle cell of the heart. The sections from my cases go far to disprove this.

Summary.

1. A new type of pathological consolidation of the lungs is described. 2. This consolidation is associated with evidence of active rheumatism elsewhere in the body and usually in the heart. 3. Its most striking feature is an enormous endothelial proliferation, the cells apparently originating from the walls of the alveolar capillaries. 4. The reactive process appears to be identical with that described by Coombs as pathognomonic of rheumatic infection elsewhere, and its specific nature is even more striking. 5. The consolidation may spread through the lungs with great rapidity. 6. There is very little disturbance of the respiratory-rate and scarcely any respiratory distress until the consolidation is enormous. 7. If salicylate of soda is given the temperature is little, or not at all, raised. 8. This type of consolidation probably accounts for the patches of dullness met with at the left base in association with rheumatic carditis and hitherto attributed to collapse from pressure.

In conclusion I should like to express my thanks to Dr. C. D. Tingle, assistant pathologist at the Royal Hospital, for invaluable assistance; to my colleague, Prof. Arthur Hall, for so kindly allowing me to examine the slides of his case, and for his valuable help in other ways; and to the Librarian of the Royal Society of Medicine, who has been indefatigable in helping me to trace references.

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Clinical and Laboratory Notes.

A NEW METHOD OF ADMINISTERING HEAVY METALS.

WITH REFERENCE TO THE TREATMENT OF CANCER.

By J. Leon Jona, M.D. Melb., M.S. Adel.

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It sometimes happens that heavy metals given by the mouth either are not absorbed (cf. Bunge [1]) or produce irritation of the stomach or bowel. The consequent vomiting or diarrhœa causes the loss of a variable amount of the administered metal as well as general effects due to the gastro-intestinal disturbance. When the metals are injected subcutaneously or intramuscularly, local irritation or even death of tissue, with consequent inflammation, necrosis, or sloughing often results. When injected intravenously the metal is either (in all probability) combined with the proteins of the blood and then picked out by the liver and slowly excreted, or a violent effect on the heart or nervous system is produced by the sudden introduction of the toxic metal, and the recipient collapses or dies, according to the dose. So it occurred to the writer that the blood corpuscles might be utilised as a vehicle. Introduced metal-laden corpuscles break down at a steady rate, so that the metal is steadily liberated into the blood, probably as a colloidal compound, and picked out by those tissues having an affinity for it. That a metal so added to a corpuscle is apparently combined with or adsorbed to the envelope of the corpuscle can readily be seen by treating a smear preparation of corpuscles combined with lead, bismuth, copper, or mercury with a solution of sulphuretted hydrogen, when the red corpuscles show a black rim like the tyre of a wheel and the surface of the corpuscle is stippled or stained more or less uniformly black. The great surface-area of the corpuscles—about 600 sq. mm. in 1 c.mm. of blood—provides tremendous scope for medication. (See Tabulæ Biologicæ.[2])

The preliminary experiments were performed on dogs, cats, and human volunteers; the individual's own blood was drawn off into sodium citrate solution, the corpuscles were centrifuged off, washed, combined with the metal, washed twice or three times until the supernatant fluid was free of metal, and then reintroduced intravenously in a saline suspension. In later experiments the blood of one animal was used for preparing the corpuscle-metal combination which was injected into another animal of the same species. In a subsequent series sheep or ox blood preparations were injected into dogs, cats, rabbits, and human beings and were found to produce the same effects as autogenous blood corpuscles. This, of course, made experimentation easier, as it was possible to keep a large stock in an ice-chest and perform a regular series of experiments with a constant preparation.

The animal experiments showed that it was possible to administer intravenously in this way doses of lead, copper, mercury, and other metals three to five times as great as would kill the animal if they were introduced intravenously in ordinary solution under the same conditions. Latterly I have been using lead and bismuth combined in this way for inoperable cancer, but it is too early yet to speak of results.

The ease of preparation, constancy of composition, and stability of the preparation, when properly taken care of, contrast with the difficulty of preparation and preservation of the ordinary solutions of colloidal lead as used at present by Blair Bell and others in cancer work.[3] Various metals and metallic substances have been used, including copper, lead, zinc, mercury, gold, silver, and iodine.

The phenomenon is probably a surface effect of the nature of adsorption, or a specific combination of the metal with some constituent of the envelope of the corpuscle. This is indicated by the fact that the corpuscles take up most of the metal when small quantities are used. Copper was used in these experiments as copper-sulphate solution, and as the dose was increased relatively more and more copper sulphate remained in the supernatant fluid. Similar results were obtained with cupric chloride and with a solution of cupric cyanide in potassium cyanide solution. Owing to the high toxicity of the latter drug, much smaller doses were given and the amount of cupric cyanide in the supernatant fluid was much diminished. After the second washing there was no metal in the supernatant fluid.

Where lead and bismuth were together combined with the corpuscles for the treatment of cancer it was found that the preparation contained: bismuth 4·8 per cent. and lead 2·7 per cent., both lead and bismuth being estimated as metal. It was possible to give a dose which contained 0·24 g. of bismuth and 0·135 g. of lead, but the usual dose was one containing 0·2 g. of bismuth and 0·11 g. of lead. It was repeated every three or four days until three or four doses had been given, and then an interval was allowed.

In the original experiments on cancer in 1924 copper was used. Although life was probably not prolonged, it was made endurable, and in some cases the patient put on weight for a while and ultimately died after only about two weeks' illness without any of the usual wasting. At present bismuth and lead combined are being tried, and it is hoped shortly to have a series on copper and lead combined.

I wish to thank Prof. W. A. Osborne for the use of his laboratories, and Prof. E. Hartung for having carried out the chemical analyses for me.

[1] Bunge, G. von: Physiological and Pathological Chemistry (translated by E. H. Starling), 1902, p. 371.

[2] Tabulæ Biologicæ (ed. W. Junk), by C. Oppenheimer and L. Pincussen, 1925, ii., 460.

[3] W. Blair Bell and co-workers: Brit. Med. Jour., 1926, ii., 924.

AN UNUSUAL CASE OF ACUTE INTESTINAL OBSTRUCTION.

By James Fanstone, M.D. Lond., D.T.M.,

AND

Gerald Golden, M.B., B.S. Lond.

Fæcal impaction is mentioned in text-books of surgery as a cause of acute intestinal obstruction, but it is so rare at home that the description of the following case may be of interest. It is an extreme example of a disease which is quite common in the interior of Brazil—namely, an extraordinary sluggishness of the large bowel. An evacuation at intervals of ten days is considered no sufficient reason for seeking medical aid, while we have seen patients who have passed more than 40 days without action of the bowels.

The case is that of a married woman of 29, who was brought to us in September, 1926. She had not suffered from any serious illness previously, but for 12 years had complained of increasing irregularity of the bowels. Eighteen days before her arrival she had eaten enormous quantities of a fruit which resembles the grape, but has larger and harder stones. Since then she had had no action of the bowels, and had suffered much colicky abdominal pain.

On examination she was found to be five months pregnant with her first child. It was difficult to feel the uterus owing to the enormous abdominal distension, which was, however, most marked laterally. A huge fæcaloma occupied the entire descending and the left half of the transverse colon. Except at the proximal extremity, this mass was stony hard, and palpation caused much pain. A previous diagnosis had been made elsewhere of transverse presentation! It was impossible to feel the mass by rectal examination. There was no fever and the pulse-rate was 90. Two large enemas were administered but failed to produce either fæces or flatus.

At operation the fæcal mass was found to be between 5 and 6 in. in width. No cause could be found for the obstruction; the pelvic colon below the mass seemed to be quite normal to sight and palpation. A colostomy was made by introducing a Paul's tube into the transverse colon, just proximal to the mass. For some weeks after operation attempts were made to evacuate the impacted mass by enemas of all kinds, but without success. Instead there was a steady increase of pain and tenderness localised to the left iliac fossa, associated with fever and emaciation. These symptoms persisted for three months.

The next event was the birth, without serious difficulty, of a healthy eight-months child. After labour the bowels opened naturally, with the evacuation of hard masses, in which fruit-stones were conspicuous. At this time about one-third of the fæcaloma came away, with temporary relief of pain and fever. No further evacuation occurred, and pain and fever returned during the puerperium. The symptoms were very severe indeed, and lasted about six weeks. During this time the lower abdomen was very tender to palpation, especially on the left side. Micturition was frequent and painful. By vaginal examination, a large inflammatory mass could be felt in the left fornix. After all symptoms had subsided completely, the fæcal mass was finally and rapidly evacuated by the introduction of a saturated solution of magnesium sulphate into the distal limb of the colostomy.

In April, 1927, the abdomen was reopened. The pelvic colon was found to be only a few inches in length, was narrowed, very hard and fibrous, and united by recent adhesions to the body of the uterus. Above this stricture the descending colon was enormously dilated and somewhat hypertrophied. As the stricture reached the upper end of the rectum, any attempt at resection and anastomosis was out of the question. The colostomy was therefore excised and the free extremities anastomosed side to side. This was followed by a complete return to health. The bowels continue to act regularly as a result of the copious daily use of magnesium sulphate.

Annapolis, Brazil.

A NOTE ON MULTIPLE SUPERFICIAL ULCERS OF THE SMALL INTESTINE.

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AMONG ulcers of the small intestine, the single duodenal ulcer, the multiple typhoid ulcers of the ileum and lower alimentary tract, and tuberculous ulcerations have all been classified and descriptively labelled. In 3000 autopsies during the last four years I have found, in three cases, an ulceration of the small intestine which fails to conform to any of those three recognised types. As attention has been directed to a similar condition in a case reported by M. Scott and J. B. Cleland,[1] the post-mortem findings in these three cases are here briefly recorded.

Reports of Cases.

CASE 1.—On Jan. 26th, 1925, the body of a Tamil, said to have committed suicide by hanging, was brought to the District Hospital, Kuala Lumpur. Its condition suggested that a chronic wasting disease had driven him in desperation to take his life. At autopsy the only lesions were a series of superficial ulcerations in the small intestine extending from 1 inch from the duodeno-jejunal flexure to 4 feet from the ileocæcal junction. There were four or five ulcers in each foot of intestine, all running transversely, and the majority involving the entire circumference of the bowel. Some of them were quite narrow, others $\frac{1}{2}$–$\frac{3}{4}$ inch in diameter. The base was fairly smooth, and the edges only slightly raised. The peritoneal surface was not thickened in most cases, but a few showed slight puckering. In their distribution, serpiginous extension in the transverse axis of the bowel, and puckering of the peritoneal surface, they almost resembled tuberculous lesions, except that there was less puckering, edges and bases were less ragged, and tubercles on the peritoneal surface were absent. There was no evidence of tubercle in the abdomen or elsewhere. Smears made from scrapings of the bases and edges of ulcers, and of their peritoneal surface, showed no tubercle bacilli. Unfortunately, the ulcers were not histologically examined, but in view of the findings in the next two cases, it is probable that the histological picture would have been similar to that described below. A history of pain in abdomen and diarrhœa of four months' duration was obtained from the brother.

CASE 2.—On July 28th, 1927, a young male Tamil was admitted to the hospital with complaint of passing loose motions, five to seven times a day, without blood or mucus, for about a fortnight. He died on August 10th and autopsy revealed only nine small superficial ulcers in upper part of jejunum. A few ulcers were circular; but most of them were oval with their longer diameter in the transverse axis of bowel. The peritoneal surface of these ulcers was puckered. No protozoa or acid-fast bacilli were found in smears. Cultures yielded coliform organisms. The rest of the alimentary canal was normal, and no evident cause of death other than the ulcers was noted. The body was emaciated, and it is likely that the illness was of longer duration than indicated by the history. Sections of the ulcers showed chronic inflammatory changes with loss of the mucous and submucous coats.

CASE 3.—A Tamil, aged 30, was admitted to the hospital on June 19th, 1927, suffering from chronic urethritis, and progressive emaciation and diarrhœa. The Wassermann reaction was negative. Intestinal tuberculosis was suspected. He died on August 20th, and autopsy revealed transverse ulcerations along the whole length of the small intestine extending from the lower third of the duodenum to 2 feet from the ileocæcal junction, with four to five ulcers in each foot of intestine. The description already given to those in Case 1 applies equally to these. Sections showed no histological evidence of tuberculous condition. There was loss of mucous and submucous coats and evidence of chronic inflammation.

These three cases present an unusual type of ulceration of the small intestine. The ulcers were superficial and showed a tendency to healing and scarring. No explanation of the genesis of these ulcers can at present be given. So rare is the condition that a diagnosis antemortem must be extremely difficult. Radiographic examination of the small intestine might help in diagnosis. The anatomical resemblance to tuberculous lesion suggests that the ulceration extends transversely round the gut by following the course of lymphatics and blood-vessels; but the lymphoid nodules do not appear to be involved, as they are in typhoid and tuberculous ulcers.

[1] Medical Journal of Australia, 1927, i., 718.

DONATIONS AND BEQUESTS.—Sir Henry James Hall, Gloverswood, Charlwood, Surrey, left £1000 to St. Dunstan's Hospital for Blinded Sailors and Soldiers, and £500 to the London Association for the Blind.—Mr. Frank Sussum, of Cambridge, left £1000 to Addenbrooke's Hospital, Cambridge.—Mr. Ramsay Paxton, of Sunderland, left £700 each to Sunderland Infirmary and Sunderland Orphan Asylum.—Among other bequests Mr. F. L. Heyn, J.P., of Craigavad, County Down, left £1000 to the Royal Victoria Hospital, Belfast, to name two beds, one to be called the "Frederick L. Heyn and Helen B. Heyn Bed," and the other the "F. L. Heyn Head Line of Steamers Bed"; £250 to the Belfast Maternity Hospital; £250 to the Society for Providing Nurses for the Sick Poor of Belfast; £200 each to the Samaritan Hospital, Belfast, and the Ulster Hospital for Women and Children, Belfast.—Under the will of Sir Edwin Evans, J.P., of Battersea, the Bolingbroke Hospital, Wandsworth Common, S.W., will receive £1000 for general purposes and the Battersea General Hospital and the Royal Blind Pension Society of the United Kingdom £250 each.—Mr. Samuel Kidd, of Derby-road, Farnworth, near Widnes, left £1000 each to the School for the Blind, Hardman-street, Liverpool, the Royal Infirmary, Liverpool, the Eye and Ear Infirmary, Liverpool, and the Ethel Gossage Home, Farnworth Branch.—Mr. Matthew Turbitt, of Birkdale, Southport, left £1000 stock to the Southport Infirmary and, subject to a life interest, £1000 each to the Imperial Cancer Research Fund, Dr. Barnardo's Homes, the Church Army, the National Lifeboat Institution, and the North of England Children's Sanatorium at Southport. After other bequests the ultimate residue of the property will be divided between St. Dunstan's Hostel for the Blind, King George's Fund for Sailors, the Society for the Prevention of Cruelty to Children, the Royal Association in Aid of the Deaf and Dumb, the Southport and District Deaf and Dumb Mission, and the Southport and Birkdale Provident Society.

Reviews and Notices of Books.

SIMPLE GOITRES.

By R. MCCARRISON, C.I.E., M.D., D.Sc., LL.D., F.R.C.P., Associate Fellow de l'Académie de Médecine, Paris; Lieut.-Colonel, I.M.S.; Pasteur Institute, Coonor, S. India. London: Baillière, Tindall and Cox. 1928. Pp. 106. 15*s*.

THE subject matter of a report by Colonel McCarrison to the International Conference on Goitre held at Berne in August, 1927, has been published in the form of a monograph and has been amplified by an introduction. A series of 143 excellent illustrations follow the report, and, if studied in the order in which they are arranged, tell their own story of the genesis of simple goitres. Three types are discussed: the adeno-parenchymatous or chronic hypertrophic goitre, the diffuse colloid type, and the lymphadenoid type. The similarity of these three goitres is confined to the thyroid swelling which is manifest in them all, even as the exanthemata have in common only the pyrexia which is their most prominent symptom. The adeno-parenchymatous and diffuse colloid goitres are endemic types and differ in their epidemiology, ætiology, and pathology; both may occur sporadically. Adeno-parenchymatous goitre occurs in mountainous regions, the diffuse colloid goitre in lowland regions and at or near the sea coast. Their geographical limits may overlap and they may occur together in the same locality. The first-named type is considered to be a true hypertrophy with the thyroid constantly straining to satisfy the needs of the tissues for its active principles but just falling short of doing so. Sufferers generally show evidence of hypothyroidism. This is essentially a place disease, and from time immemorial has been associated in its origin with water-supply. Two theories as to its causation have survived from amongst many promulgated, the iodine deficiency theory and the infectious or toxic theory. Colonel McCarrison is of the opinion that the truth may lie in a blend of the two, but it is rather difficult to see how such different conceptions could be made to overlap.

We have little precise knowledge as to the geographical distribution, epidemiology, ætiology, and biochemistry of diffuse colloid goitre. Its cause is probably to be sought in factors which interrupt the normal cycle of the thyroid gland's activity at the stage of colloid storage. It is most prevalent in children round about the age of puberty, and it progresses with remissions for from three to five years and then regresses. Iodine may play some part in its production, but is not the only factor involved. Thyroxin given by the mouth may have no effect, but the same drug administered intravenously rarely fails to cure the condition. The lymphadenoid type of goitre is not endemic. It is a hypertrophic reaction of a physiologically insufficient organ, with which is associated a preponderance of lymphocytic aggregates and fibrosis in the gland. It can be produced experimentally in rats by dietetic deficiency. McCarrison considers that the basal factor in the causation of this type of goitre in man also is a diet deficient in vitamins of the A, B, and C classes. This, however, has still to be proved. He considers that it is not related to iodine deficiency since the addition of iodine to the food neither prevents nor cures it.

This monograph will be of considerable value to those interested in thyroid disease, especially in that it directs attention to the importance of toxic and dietetic factors in the genesis of these conditions. It should also do something to counteract the modern tendency to the indiscriminate use of iodine in the prophylaxis and treatment of all forms of simple goitre.

THE SPECIES PROBLEM.

By G. C. ROBSON. Edinburgh: Oliver and Boyd. 1928. Pp. 283. 15*s*.

THE Keeper of the Mollusca at the British Museum has written an interesting and suggestive book. The first part discusses the criteria on which "species" of animals and plants may be separated from one another and represents well the modern point of view that habits, food, and such physiological characters must be taken into account equally with morphological structure. A species is a species not so much because it has a unique anatomy, but because it occupies a unique niche in its relations to the rest of animate nature. The second, and larger part, discusses the evolutionary divergence of species, and explores the various suggestions which have been made in the light of all the knowledge which has accumulated since Darwin. It is stimulating and provocative and reaches no conclusions. There is a useful bibliography and a poor index.

ENDOCRINOLOGY.

Internal Secretions and Metabolism in Infancy and Childhood. By FRITZ B. TALBOT, A.B., M.D., Clinical Professor of Pediatrics, Harvard Medical School. Supervising editor: R. S. HAYNES, Ph.B., M.D., Clinical Professor of Diseases of Children, College of Physicians and Surgeons (Columbia University), N.Y. London and New York: D. Appleton and Co. 1928. Pp. 178. 16*s*.

THIS is the thirteenth volume of a series of monographs on clinical pediatrics which are written primarily for the general practitioner. Both the authors are men of great experience in this subject and the work is authoritative. The purpose of the volume is to outline in simple terms those fundamental principles of metabolism which form the basis of modern clinical medicine. Twenty years ago most students were taught that medical therapy was based principally upon clinical observations, bacteriology, and post-mortem examinations. They learnt in great detail the symptoms and signs of the various diseases of nutrition and the lesions which were characteristically produced by each disease, but they knew very little about the abnormal physiology associated with the different syndromes. In the last two decades, however, physiologists and chemists have so increased our knowledge of the normal and abnormal functions of the body that our conception of disease has been greatly modified. The authors of this monograph have considered the subject from the most modern standpoint and have included an account of recent experimental work. The work is divided into five chapters. In the first of these the fundamental metabolic processes of childhood are fully discussed, and much useful information is given about the normal variations both of metabolism and growth which serve as standards of comparison in the following sections. In the second chapter pathological variations in metabolism are dealt with; a clear account is given of acidosis and alkalosis. An outline of ductless gland dystrophies is set out in the third chapter, only such data being included as have a definite experimental basis. The fourth chapter gives a description of the deficiency diseases of childhood, notably rickets and scurvy, while the fifth is devoted to such abnormalities of growth and development as infantilism, mongolism, and obesity. Many useful hints as to the treatment of these various conditions are incorporated. An excellent series of diagrams and photographs will be useful in helping the practitioner in differential diagnosis; the X ray photographs illustrating the various bone diseases are particularly good. The monograph can be cordially recommended.

Hormone und Inner Sekretion. By Dr. FRITZ LAQUER, Privatdozent an der Universitat Frankfurt A.M. Dresden und Leipzig: Verlag von Theodor Steinkopff. 1928. Pp. 136. M.8.50.

THE rapidity with which masses of facts and observations accumulate in the literature of internal secretions makes it difficult for one observer to follow even a limited aspect of the subject. Any attempt to verify all the results of the enormous number of workers in this field is out of the question, and each

worker can only try to correlate his own findings with those of well-accredited laboratories. Dr. Laquer has gathered together much of the literature of hormones and internal secretions which has grown during the last 12 years; over 1200 references have been collected. He makes little effort to supply a critical survey: in the matter of physiological explanations of the actions of different hormones the reader is at liberty to choose whatever theory pleases him most without much guidance. With regard to clinical data, however, the results obtained by serious workers of different nationalities are substantially the same. The active hormones produce effects which vary only in degree in the hands of different observers. When physiologists and biochemists attempt to explain the modus operandi of the hormones the most diverse opinions are offered, and fundamental disagreement still exists.

Dr. Laquer does not attempt to resolve these differences, and his book will be of value to the research worker in that the literature is clearly summarised and references are given to articles in the less well-known special journals which may have escaped attention.

THE GREAT PROBLEM AND THE EVIDENCE FOR ITS SOLUTION.

By GEORGE LINDSAY JOHNSON, M.A., B.C., M.D., F.R.C.S., F.R.P.S., F.R.S. Italy. With a Foreword by Sir A. CONAN DOYLE. London: Hutchison and Co. 1928. Pp. 380. 18*s*.

PUBLIC interest in spiritualism—a general name for the phenomena whose study constitutes "the great problem" attacked by Mr. George Lindsay Johnson—is reflected in the lay press and in a profuse literature which sometimes appears associated with the name or under the imprimatur of persons whose qualifications should give authority to their opinions. The object of Mr. Johnson's work, which has received the eulogy of Sir Arthur Conan Doyle, is "to collect all the evidence at our command, and to endeavour to convince the reader of the existence of a future life." The first part of the proposition is fulfilled by the collection and collation of a vast assortment of dreams and stories of apparitions, examples of clairvoyance and telepathy, spirit vocalisations and photography, and automatic writing; past and present beliefs and traditions being put under contribution, we have an index of proper names occupying more than 800 lines. In a chapter headed "Evidence of a future life from the miracles of the Bible, together with modern phenomena of a similar nature," many unusual cases of recovery from illness are given, but it is difficult to understand how the occurrence of healing, apparently brought about by mental processes, can be used as evidence of survival in any partly materialised form, and it is doubtful whether anyone, unless he is already a confirmed believer in spirit interference, will be impressed by the reasoning. Endeavouring to explain certain difficulties of the non-believer in spiritualism the author replies to his question, "... Why is it that everybody cannot get into touch with their friends on the other side?" by saying that "The reason is quite simple. In order to receive messages from the spirit world it is essential that a psychic or medium be present"; here, again, none but the converted will be satisfied with the answer. As an example of painstaking research in collecting stories of the "marvellous" the book is interesting, while at the same time it exhibits the kind of proof on which belief in so-called survival is based.

Even if the phenomena of the séance room, and the stories of supernormal occurrences be accepted, it does not follow that they are to be explained by spiritualistic agency, while there can be no denial that the belief in the sequence has opened the door to deception, sometimes of the most gross kind. It is necessary to glance only at the advertisements of some of the publications connected with the spiritualistic movement to realise this. In juxtaposition with announcements of services in "temples," "sanctuaries," and "churches," we have announcements from palmists, astrologists, and fortune-tellers, seductively brought before the public eye, while the vendors of unknown powers of diagnosis, of cures for consumption and cancer, of "female corrective herbs," of electric treatments, and galvanic belts, find a large public through these media, to judge by the amount of space which some of the advertisers are able to afford. Such being the associations of spiritualism as shown by its recognised press, the answer is supplied to the frequently reiterated complaint by spiritualists that their cult is ignored or ridiculed by science.

CLINICAL DIAGNOSIS BY LABORATORY METHODS.

Sixth edition. By JAMES CAMPBELL TODD, Ph.B., M.D., Professor of Clinical Pathology, University of Colorado School of Medicine; and ARTHUR HAWLEY SANFORD, A.M., M.D., Professor of Clinical Pathology, University of Minnesota. London and Philadelphia: W. B. Saunders Company. 1927. Pp. 748. 28*s*.

"Todd" has long been known in this country, and "Todd and Sanford" is assured of an equal popularity. This is a book which is of particular value to the student, for the number and the excellence of the illustrations, the clarity of the language, and the short, but concise, notes on the indications for the applications of various tests and the interpretation of the results. The present edition has been brought thoroughly up to date, and all new procedures of clinical pathology as deserving admission, such as the Kahn test, the technique of duodenal intubation, and the tests of liver function, find place in its pages. Altogether, an excellent book.

MICRO-METHODS.

Mikromethodik. Quantitative Bestimmung der Harn-, Blut- und Organbestandteile in kleinen Mengen für klinische und experimentelle Zwecke. By LUDWIG PINCUSSEN, Direktor der biochemischen Abteilung des Städt. Krankenhauses am Urban in Berlin. Leipzig: Georg Thieme. 1928. Pp. 200. M.6.

THIS book, which now appears in its fourth edition, has been enlarged and improved. Opening with sections on general principles on the use of the colorimeter and on nephelometric methods, the author proceeds to give full experimental details for the determination of the constituents of urine and blood by approved micro-methods, many of which have been elaborated or improved by himself. In addition there are sections devoted to the estimation of the ash constituents of fæces or of tissues, and to the gasometric examination of blood by means of a modified Barcroft method. The book is clearly written and forms a handy compendium of micro-methods, suitable for clinical or experimental purposes, which can be carried out without the acquisition of elaborate apparatus or the use of a micro-balance.

TO-DAY AND TO-MORROW.

Metanthropos, or the Body of the Future. By RONALD CAMPBELL MACFIE, M.A., M.B., C.M., LL.D. London: Kegan Paul, Trench, Trübner and Co., Ltd. New York: E. P. Dutton and Co. 1928. Pp. 96. 2*s*. 6*d*.

Dr. Campbell Macfie adds a volume to the well-known To-day and To-morrow Series which should certainly be read by a large public, for the number of persons now intelligently interested both in anthropology and physiology is very large. We may conceive that the last and most important chapter of this little book will irritate many of these, and some of the general deductions may be challenged, but despite the drastic commentary upon one side of society

contained in the following passage, the author's message is cheerful. "If love," he writes, "in the sense of strong physical and spiritual attraction between a man and a woman, have even temporarily weakened; if men no longer are drawn to women by their health—by their full breasts, and luxuriant hair, and well-formed limbs, and red lips, and fresh complexions, and feminine psychology—if nowadays women are so camouflaged with paint and powder and so attenuated by the decrees of fashion that there is little possibility of distinguishing the healthy and wholesome from the unhealthy and unwholesome—if men have grown so accustomed to paint and powder as to lose the love of the healthy and fresh—if sexual selection is no longer eugenic and no longer a matter of deep personal affinity—if men and women through modern dances and plays become sexually bláses—if the best men and women marry late and have small families—if religion and morality are out of fashion—if these things are so and in so far as they are so, the race is suffering and must suffer for perhaps more than one generation." These Juvenalia epitomise much which the author has to say, but none the less he comes to the conclusion that the majority of men and women are not yet touched by decadence and that the Anglo-Saxon stock with its mixture of Nordic and Celtic blood is so stable and so good that there is no fear of any lasting deterioration.

PHYSIOLOGY AND MEDICINE.

Pathological Physiology of Internal Diseases: Functional Pathology. Fourth edition (revised). By A. W. HEWLETT, M.D., B.S. late Professor of Medicine, Stanford Medical School. London and New York: D. Appleton and Co. 1928. Pp. 787. 35*s*.

THE advances in recent years of experimental physiology and particularly of mammalian physiology have thrown new light on the causation of disease and furnished new lines of treatment. Moreover, physiology has brought new methods of diagnosis to the clinical laboratory. The benefit has not been wholly one-sided, but attempts to correlate medicine and physiology in text-books have for the most part dwelt on the debt of medicine to physiology. This work is no exception. It was originally written by the late Dr. A. W. Hewlett, who began his medical career as a physiologist, later becoming a professor of clinical medicine, and it has recently received extensive revision, as a mark of appreciation to the author by ten of his medical colleagues. The book, in its present form, makes a special appeal to clinicians. Historical references are scanty, but a generous bibliography is supplied. Certain of the views on immunity here set out are already superseded, at least in this country, in favour of physico-chemical hypotheses, but, in general, the book may be accepted as quite up to date.

Précis de Physiologie. Seventh edition. By MAURICE ARTHUS, Professor of Physiology at the University of Lausanne. Paris: Masson et Cie. 1928. Pp. 1152. Fr.70.

A TEXT-BOOK of a thousand pages is not the prevailing notion of a précis, but evidently the bulk of this volume has not deterred medical students from buying it, since it has attained a seventh edition. The work differs in three respects from text-books of similar size in our language. It is more narrowly confined to the exposition of function, the author expressly avoiding the discussion of physiology from the point of view of physics and chemistry. Experimental technique is not described; for example, "tambours" appear in diagrams where "piston recorders" would be used in this country. Lastly, when results of recent researches are still controversial, these are omitted; these omissions may save the student's time but, we believe, only at the expense of loss of stimulation. More prominence is given to the medical standpoint than is usual in our text-books; thus, body temperature—a subject of great clinical importance—is fully discussed. A useful chapter is included on anæsthesia. British readers will find much of interest in this book.

THE PRINCIPLES OF INFANT NUTRITION.

By K. H. TALLERMAN, M.D., M.R.C.P., and C. K. J. HAMILTON, B.M., M.R.C.P. London: William Heinemann, Ltd. 1928. Pp. 183. 10*s*.

THE object of this book is to discuss the principles underlying infant nutrition, and to point out their application to the practice of infant feeding rather than to advocate any particular method. The authors have succeeded in giving a readable presentation of the physiology and biochemistry of nutrition in infancy. The relative advantages of various methods of feeding are discussed with impartiality, but the authors' interpretation of physiological theories disposes them to give preference to simple modifications of milk with added carbohydrate and low fat-content. Whole milk feeding is discouraged; percentage feeding is regarded as unnecessary. The reason for these judgments, which are probably in accord with the views of the majority of authorities in this country, are clearly explained. The authors are opposed to the use of citrate and of alkalis in general, and are convinced of the advantages of acid milks. The book is of convenient size, and each chapter contains a useful list of references. It may be recommended for the use of senior students and of practitioners who wish to obtain a concise account of modern teaching.

PSYCHE MINIATURES.

A Symposium of Culture. By G. ELLIOT SMITH, D.Sc., Professor of Anatomy in the University of London; BRONISLAW MALINOWSKI, D.Sc., Professor of Anthropology in the University of London; HERBERT J. SPINDEN, Ph.D., Peabody Museum, Harvard University; and A. GOLDENWEISER, Ph.D. Pp. 89.

The Alchemy of Light and Colour. By OLIVER L. REISER, Assistant Professor of Philosophy in the University of Pittsburg. Pp. 86.

Intelligence and Mental Growth. By CLAUDE A. CLAREMONT, B.Sc. Lond. Pp. 138.

The Standardisation of Error. By VILHJMUR STEFANSSON, M.A., LL.D. Pp. 110.

London: Kegan Paul, Trench, Trübner and Co., Ltd. 1928. 2*s*. 6*d*. each.

As will be seen from the above titles a large range of knowledge is covered in these four little books of the Psyche Miniature Series, and it is given in so brief a form that further condensation as a review is impossible. The Symposium of Culture, for example, may be regarded as the abstract of a review of its own subject from four different angles of view, a lucid preamble by Prof. Elliot Smith setting out the controversial points in respect of the diffusion of social knowledge. Prof. Reiser, in discussing the phenomenon of colour, shows how the ingenuity of the scientist in overcoming limitations has brought about the position that no one can predict what the future may hold in store. Starting with the difficulties which have always presented themselves to the ordinary observer confronted with the differing views which the psychologist may hold in respect of colour as an attribute, or as an element in consciousness, he discusses the chemical and biochemical bases of colour and closes with a section, not at all easy to follow, in which he attempts to bring out the nature of the interdependence between consciousness and chemistry. Mr. Claremont's little book makes far simpler reading, partly because a well-written preamble prepares us for the chapters which follow, and partly because he has a real gift for illustrating his thesis by simple analogies. The chapter on intelligence and instinct forms a good example of

his ability to state in clear language exactly what he means, and no one can read it without acquiring a valuable lesson in what may be termed psychological grammar.

Dr. Stefansson is gay; the following sentences with which the second part of his little book commences gives a good idea of his respect or disrespect for the discernment of the public. "The most striking contradiction of our civilisation is the fundamental reverence for truth which we profess and the thorough-going disregard for it which we practise. . . . God and truth have from the earliest times been the two ideas that have commanded the greatest reverence . . . philosophers have discussed at great length whether God is good, they have never discussed whether truth is good." Whereupon the author starts to ask if there be any sound reason why truth should be exempted from that fundamental scrutiny to which even the gods have had to submit. It is, of course, obvious that the same question may be asked of the same people and receive entirely different replies, each of which may be true, the variants being due to the fact that the answers have been given in accordance with the varying implications contained in the question, although not put into words. On this ground, by itself, we may agree with the author that, like religion, truth is neither good nor bad; but the examples which he adduces in order to come to the conclusion make very agreeable reading.

MEDICAL AND ALLIED TOPICS IN LATIN POETRY.

By HENRICH OPPENHEIMER, D.Lit., LL.D., Ph.D. Lond., M.D. Heidelberg, M.R.C.P. Lond., Barrister-at-Law. London: John Bale, Sons and Danielsson. 1928. Pp. 445.

IN a sad little preface Dr. Oppenheimer gives as the origin of this book a certain enforced leisure which fell upon him during the period of the war owing to his unlucky position as an enemy alien—in his own words "an innocent victim of social and 'horribile dictu' to some extent of professional ostracism." Accordingly, the author sought and found comfort in the company of the classical writers, and the result is an interesting collection of passages, contained in some 20 well-known Latin poets, all being relevant to medical knowledge. These passages he has arranged according to their subject matter, providing explanatory notes and English translations, some of which are quite familiar. Where the versions are metrical he gives the correct attributions, but with regard to both English and Latin texts he admits occasionally having taken certain liberties, when a variant reading seemed to bring out better the significance of a passage; as the exact alterations made are not indicated this seems rather a daring proceeding. As might be expected, the majority of the quotations come from well-known authors of the last century B.C. and the first 60 years of the Christian era, a period which includes Lucretius, Virgil, Ovid, Horace, Catullus, Martial, and Juvenal—the quotations from the last four being extremely numerous. The two older playwrights, Plautus and Terence, are also freely drawn upon, and all the passages extracted from this wide range of reading are arranged under a subject-index, so that citations having reference to medicine, surgery, and obstetrics are grouped together, while separate sections are devoted to various special diseases, to biology and physiology generally, to sociology, materia medica and toxicology, neurology, insanity, and dietetics. The result is a really interesting book, which although in no sense a medical history, none the less throws a remarkable light upon the medical practice and medical superstitions of the past, especially upon those of imperial Rome. An interesting little chapter, entitled the Medical Register of Poets, gives an alphabetical list of the physicians who are mentioned by name in the works of the various authors consulted, and by this register we are reminded how frequently was the medical profession the object of Martial's biting criticisms.

JOURNALS.

ACTA PÆDIATRICA. Vol. VII., 1928.—Supplement 2 comprises the proceedings of the Fourth Scandinavian Pædiatric Congress. Prof. S. Monrad reviews the subject of congenital pyloric stenosis from his experience of 223 cases. He holds that the essential defect is a congenital hypertrophy and that this is not secondary to spasm. He has found medical treatment as efficacious as surgical.—Dr. H. von Willebrand favours operative treatment of pylorospasm in all but the mildest cases.—Dr. L. Kena-Apajalahti gives an account of the histological appearances of the brain of a cretin child. These were of the nature of an agenesis rather than a failure of subsequent development, and corresponded closely to what is found in simple primary amentia. He suggests that the cerebral defect in cretinism is primary, i.e., an accompaniment rather than a result of athyroidism.—Prof. A. Yllpö discusses the relative merits of carbohydrate and protein feeding in the treatment of infantile intoxications, and expresses his decided preference for the latter.—In a paper by Dr. O. Utter attention is drawn to the frequency with which an alimentary saccharosuria, in the absence of glycosuria, occurs in infants. The increasing tendency to use cane sugar in the artificial feeding of infants gives added importance to this occurrence. He summarises the results of his investigations on the various factors (concentration, alkalinity, and fat content of the feeds) which seem to influence the excretion of saccharose.—Dr. A. Lichtenstein discusses the ætiology of scarlet fever, and the immunity of the new-born to this infection. He considers that the evidence afforded by this immunity is compatible with the view that scarlet fever is a manifestation of anaphylaxis.—Prof. E. Bloch describes the clinical features of a series of cases of cœliac disease. He was unable to find in them any evidence of avitaminosis. Two of his cases showed typical tetany; ultra-violet irradiation cured the latter but aggravated the intestinal disturbance. He suggests that in this disease tetany may be the result of fixation of calcium by the soaps formed in the stools.—Dr. C. Friderichsen gives an account of a series of cases in which intractable and fairly localised muscular pains occurred, with some degree of paresis. Some of the cases were children in the third year, and in them the symptoms gave rise to suspicion of muscular "growing pains." In all of them there eventually appeared some evidence, clear or equivocal, of a scorbutic condition. Taken in conjunction with the histological changes found by Höjer in experimental scurvy in guinea-pigs, he suggests that these observations yield evidence of a "pre-scorbutic myopathy," which may be present in a latent stage of scurvy and may simulate subacute rheumatism.—Dr. Knut Wejdling discussed some of the factors in the pathogenesis of spasmophilia. He thinks that the most important one is the electrostatic condition of the tissues, and believes that estimation of the potassium content of the blood is of greater value than the calcium content.

Supplement 3 consists of a monograph by Dr. C. W. Herlitz on the regulation of the blood-sugar in healthy infants and in those who exhibit signs of the exudative diathesis, particularly of eczema. Series of experiments are described and their interpretation is discussed at length. Among other conclusions reached are the following. In infants with fresh cutaneous eruptions of less than two weeks' duration the fasting blood-sugar value was higher than in normal infants or in those with long-standing eruptions; the alimentary blood-sugar curve reached a higher maximum but its return to the normal was not delayed. The increase in tone of the vegetative system—particularly in the liver—which is associated with the alteration in carbohydrate metabolism, he regards as the result, and not the cause, of the cutaneous eruption.

THE LANCET.

LONDON: SATURDAY, JULY 7, 1928.

LOCAL GOVERNMENT REFORM.

BIG changes, affecting the health services of local authorities throughout the country, flow from the proposals in this year's budget for revising the incidence of rates upon agriculture and industry. It was easily realised that the Chancellor of the Exchequer could not exempt agricultural land and agricultural buildings from rates and could not grant a large relief to industrial hereditaments without providing from the national finances some compensation for the loss of rating power which the local authorities would feel. But it could hardly have been so readily foreseen that the revision of the financial relations between the Exchequer and the local authorities would involve the decision to transfer (as provisionally proposed in 1926) all poor-law functions to the county councils and county boroughs.

It has, of course, been long admitted that the present poor-law unions, set up in 1834 under a scheme based on the local market towns and the then existing means of access thereto, have ceased to form the ideal arrangement—at any rate, for medical purposes. As the Government's white paper (Cmd. 3134) points out, at present every rural union in the country has institutions which, with the decline in the number of persons institutionally relieved in rural areas, are seldom kept full. Their facilities for medical treatment cannot economically be modernised. Meanwhile other local authorities have been established which are charged with the duty both of preventing disease and of treating the sick. Between the functions of these newer authorities and those of the poor-law guardians there is overlapping. If and when the poor-law is transferred from the guardians to the county and county borough councils, there will be a chance to eliminate this overlapping, to make a better classification of the sick, and to provide more economically the institutional facilities for which the demand is progressively increasing. In its application to London the new policy means the abolition of the Metropolitan Asylum Board and the transfer to the London County Council of the services which the Board at present maintains. The cost of poor relief being spread over the County of London through the county rate, the Metropolitan Common Poor Fund (the cause of so much political controversy and the object of so much improvisation in recent years) will also be abolished.

Among the existing Exchequer grants which the new plan will discontinue all over the country are the percentage grants in aid of health services—i.e., for tuberculosis, maternity and child welfare, welfare of the blind, venereal diseases, and mental deficiency. When local authorities no longer receive these grants, a new annual grant in aid of revenue will be substituted for the first quinquennial period. The formulæ of ascertainment and apportionment are intricate and will require careful examination by those who possess the necessary actuarial qualifications. In broad outline the Government plan should help the poorest areas which, under the percentage grant system, could least afford to maintain an adequate standard and yet received the least assistance from national funds. Thus the rating relief, which the Government claims to be giving to productive industry by this year's budget, is found to be merely one step in big changes in the machinery and finance of local government. The programme appears to be far-sighted and shows evidence of a logical coördination which has not always been a feature of changes in English administration.

THE CONTROL OF DIPHTHERIA.

WHEN BEHRING made his famous experiments on passive immunity he was lucky enough to choose one of the few organisms which arouse great antitoxic powers in the blood of inoculated animals. His results in the treatment of diphtheria were therefore remarkable—so remarkable as to encourage a hope that all bacterial infections would meet their match in the new curative sera. Certainly there seemed no doubt that diphtheria was conquered, since by effective treatment of every case the spread of the disease must necessarily be checked. But with the passing years these hopes have not been realised, and the revolution in therapeutic measures has by no means abolished the necessity of using them. The incidence of diphtheria not only remains high, but, in London, has for many years been steadily rising, whilst the case-mortality has shown an alarming increase in Germany and other countries where serum treatment has long been employed as a routine. Much of this failure is, of course, due to delays before the remedy is administered, but as medical men have been taught for a generation that early treatment is essential, and the public has been informed incessantly of the need for early diagnosis, little immediate improvement can be expected in this direction. We cannot avoid the conclusion that current methods will not further reduce the mortality among serious cases, and that merely curative measures are not going to control the incidence of the disease by themselves.

Both in the United States of America and in Germany the greater prevalence of diphtheria has been associated with unusual malignancy. The symptoms include glandular enlargement and periglandular œdema with foul-smelling faucial deposits and discharge from the nose and throat, and there is commonly severe toxæmia, cardiac paralysis, renal failure, and early death. Fatalities, it is recorded, have occurred despite administration of antitoxin even within the first 24 hours, and this absence of the usual response to treatment has sometimes suggested that the clinical condition was dominated by a secondary streptococcal infection. Successes have been reported from the combined use of antidiphtheritic and antistreptococcal serum, but its efficacy as a routine measure is still in dispute. Although we in this country have enjoyed relative freedom from severe infections of the kind, experience of the malignant form has been recorded in certain towns; in Bristol, for example, Dr. D. S. DAVIES, the late medical officer of health, reported that the years 1919 to 1926 were characterised by an increase in the severity of the disease. Dr. H. S. BANKS, of the Leicester Isolation Hospital, says that in the past two years diphtheria has taken on a more malignant form than he has ever previously encountered, and this has led him to explore the possibilities of more intensive treatment. As he and Dr. GEORGE MCCRACKEN record, in a paper published elsewhere in this issue, their cases were divided into groups according to severity, and the 27 regarded as "malignant," having severe adenitis, were treated with very

large amounts of antitoxin. One had as much as 140,000 units in one dose, and the average quantity given was 71,000 units of antitoxin intravenously, with 31,000 units by intramuscular injection. Fifty-two cases whose infection was not quite so severe were given, on the average, 19,000 units by each route, whilst the remaining 214, of only moderate severity, had an ordinary intramuscular dose of 8000 to 16,000 units. The details of technique are set out in their communication and need not be considered further here; it is enough to say that the advantage claimed for the intravenous route is the rapidity with which maximal concentration of serum in the circulation is obtained, contrasting with a delay of 24 hours with intramuscular and three days with subcutaneous injection. BANKS and MCCRACKEN rightly describe toxic diphtheria as an acute emergency, and consider that to give a "haphazard subcutaneous injection of serum" is equivalent to postponing operation on a gangrenous appendix for three days. The total doses, which rose to 200,000 units in some cases, are not, of course, unprecedented. V. BIE, of Copenhagen, is quoted as having used as much as 300,000 units in very grave cases. They are, however, far greater than those in general use by the profession, or previously employed at the hospital, where it is noteworthy that the case-mortality has been reduced from 9·3 per cent. in the preceding decennium to 2·6 per cent. in the year ending last March. Excluding patients who died within 24 hours of admission, and those with laryngeal diphtheria, it was only 1·7 per cent., which is much the same as the death-rate of 1·3 per cent. in a series of 1456 cases treated last year by BIE. It is further stated that the incidence of complications, notably paralysis, has also diminished, and these results are so remarkable that they must lead to reconsideration of the current view that it is useless to give antidiphtheritic serum in doses of more than 30,000 to 50,000 units.

More successful use of antitoxin would not be likely, however, to make much difference to the incidence of the disease, and the question arises whether the best use is being made of the prophylactic methods at our disposal. The answer is in the negative. In this country the progress of toxoid-antitoxin immunisation, though steady, is slow, first because the profession has apparently not been convinced that the method is effective and, secondly, because the public is suspicious of inoculations and disturbed by the disasters of Vienna and Bundaberg. Last year's increase of diphtheria in New York, where immunisation has been tried on a large scale, may lead to disparagement of the method, and it is certainly disappointing. But it must be remembered that the city has a population of 1½ million children under the age of 15, only about a third of whom have been immunised; the remaining unprotected million, —mainly children of pre-school age—offer an abundance of material susceptible to attack during a period of increased prevalence. In Germany the Prussian Health Council has recommended widespread prophylactic inoculation among children in districts with a high incidence of diphtheria, and in Berlin immunisation is being provided free for all children between the ages of one and six years. We are glad to learn that more and more local authorities in this country are offering similar facilities. Thus, at Manchester, the City Council has just approved a scheme by which for six months toxoid-antitoxin will be issued gratis to practitioners and health officers, and immunisation will be recommended to the public through every possible avenue. Information is to be offered at maternity and child welfare centres, at the various children's hospitals, and by way of the school medical service, as is being done in some of the London boroughs, 12 of which now provide means of protection by toxoid-antitoxin inoculation. It is regrettable that schemes of this kind are not being tried more widely, if only on economic grounds; for the sum of £30, which is what a diphtheritic child costs London, would protect 200 children against the disease. The safety of the procedure is actually thrown into relief by the two or three disasters that have occurred abroad, for they would not have been possible with the immunising preparations obtainable from reputable sources in this country. As Dr. VEITCH CLARK told the Manchester City Council, we have the evidence of many large fever hospitals that diphtheria among the nursing staff has been stamped out by the immunisation of nurses before their exposure to diphtheria in the wards, and no accidents following immunisation have been reported in Great Britain. The method may not be infallible but it is certainly safe, and, to quote the London County Council's health committee, "According to authoritative American observers, as a result of observation over periods ranging from three to six years, no child who received the full immunising course, and had given a Schick-negative reaction, subsequently contracted diphtheria." The profession in this country may wish for evidence from sources nearer home, but such evidence on a large scale can scarcely be available until the method is given wider use. The case in its favour is already so good that parents ought to be given a chance of protecting their children if they are willing to do so. Not least ought this opportunity to be given in London and other large cities, where the incidence and mortality of diphtheria are high.

CONCURRENT EVOLUTION.

THERE has been a revival of the public interest in the problems of evolution, particularly in so far as they affect our conception of man's origin. Evidence of this interest is to be found in a recent number of the *Outlook* (June 23rd), where Mr. JAMES STANLEY LITTLE discusses the problem of human origin under the title of "concurrent evolution." Mr. STANLEY LITTLE is an evolutionist, but is of opinion that the theory now accepted by the majority of anthropologists —namely, that all existing races of mankind, white, yellow, and black, are the descendants of a common "Adam," or ancestor, is "false and unscientific." He believes that just as two men may discover the same idea or make the same invention independently, so two new and very similar species or breeds of animals may come into existence separately in the wide womb of nature. The underlying idea, that of parallel evolution or orthogenesis, is one which has been, and is being, much debated by professional students. The late Prof. KLAATSCH put forward the idea, which had been tentatively held by some of the older anthropologists, that peoples of the Mongolian type came of an orang ancestry, while the peoples of Africa came of another anthropoid lineage. Some 16 years ago Prof. WOOD JONES startled his fellow anatomists by putting forward the theory that man and the anthropoid apes had arisen and evolved independently from a basal primate stock, acquiring their many points of structural resemblances in the course of their separate evolution. Quite recently Dr. H. FAIRFIELD OSBORN, who has made a special study of the evolution of horses and elephants, and proved amongst them instances of parallel or "convergent" evolution, has separated man's lineage from that of anthropoid apes and carried both as independent lines into a distant geological past, thereby exciting much current comment

throughout the American continent. Even HUXLEY wrote in a letter to ROMANES (1888) that "it is quite conceivable that every species tends to produce varieties of a limited number and kind, and that the effect of Natural Selection is to favour the development of some of these while it opposes the development of others along their *predetermined* line of modification." Thus in postulating an independent origin and an almost predestined evolution for the diverse races of modern humanity Mr. STANLEY LITTLE can claim a considerable amount of professional justification. The point at issue is not the truth of evolution; that theory is accepted by all intelligent critics; what has yet to be finally determined is the mode by which new breeds or species are produced in a state of nature. The laws of heredity are not in doubt, but their degrees of plasticity have still to be probed.

Mr. STANLEY LITTLE carries his inquiries into the realm of culture and is a candid critic of those who hold that high civilisations of a similar kind must stand to each other as daughter to mother. For example, he is severe on those who seek to trace the old civilisations of Central America to an Asiatic of Egyptian original. Here again Mr. STANLEY LITTLE has stepped unwittingly into another arena of hot professional debate. It was a youthful visit to Mexico that convinced the late Sir EDWARD B. TYLOR that the ancient civilisation of that land must be sought for in the Old World, but as he went on he found so many points which were difficult of reconciliation that he relapsed to the older explanation which postulated that human mentality was the same all the world over and therefore solved the problems of a budding civilisation by adopting corresponding measures. In recent years Prof. ELLIOT SMITH has brought forward much cogent evidence to demonstrate that TYLOR'S original idea was right—that there had been a cultural drift across the Pacific from Asia to America many centuries before the time of Columbus. At the present time the "diffusionist" theory—that a forward swing of the pendulum of evolution, whether in ideas, arts, or in biology, is single-centred—is in the ascendant; from a cradle of inception ideas and invention spread from land to land. A concrete instance may serve to illustrate the nature of this problem. So many are the points of difference—as well as of resemblance—between the railroad services of America and of England that did we not know as a historical fact that one was derived from the other we might be inclined to cite them as cases of independent or parallel evolution.

Mr. STANLEY LITTLE cites the development of languages in support of his contention that evolution works in a "concurrent" way. "All languages were," he asserts, "evolved innocent of literary form, yet they all, or nearly all, generated, so to speak, grammars of sorts, roughly considered, having affinities in their major aspects, however different in their minor details." Certainly it is true that no living thing—and language and art are just as alive as any form of protoplasm—can continue without change, slow as that change may be. Already we see that the English tongue of Britain and that of the United States do tend to move apart, whatever may be the nature of the driving force involved. But when we find languages such as Italian, Spanish, and French, with so many close resemblances, we should explain those resemblances by postulating a common ancestry—even if we knew nothing of Latin. We should never dream of ascribing them to independent or parallel origins. In like manner we are justified in ascribing all Aryan forms of speech to a mother tongue. The biologist in explaining the close resemblances between all living races of mankind proceeds in exactly the same manner. Why should he postulate several sources when one is sufficient? The student of human evolution brigades man and anthropoid apes together because they are so alike in the fundamentals of their structure. He does not postulate separate origins for them, because if evolution is true it is much easier to derive man's structure from that of a primitive anthropoid than from a very lowly ape-like tarsioid.

Annotations.

"Ne quid nimis."

TESTAMENTARY CAPACITY.

THE plain man might think that, if a person be certified as insane, he is ipso facto incapable of formulating a sane will. This was the opinion of Lord Brougham, who held that the mind acts as a whole, and if there be insanity in any one part, then the whole is invalid. With the advance of psychiatry, the issue has been narrowed down to the question—"Was this man capable of making this particular will at the time of its execution?" In Banks *v.* Goodfellow, Lord Chief Justice Cockburn put the pertinent question, "But what if the mind, though possessing sufficient power, undisturbed by frenzy or delusion, to take into account all the considerations necessary to the proper making of a will, should be subject to some delusion, but such delusion neither exercise, nor be calculated to exercise, any influence on this particular disposition, and a rational and proper will is the result; ought we, in such a case, to deny to the testator the capacity of disposing of his property by will?" Thus the whole problem was once more thrown open, and solicitor and medical man must combine to determine whether the testator's mental condition is or is not such as should invalidate his will.

Mr. Noel Middleton has reviewed this position in a paper read before the Medico-Legal Society on June 28th. He reminded his audience that, to have testamentary capacity, a man must possess an understanding of the nature of the business on which he is engaged, a memory of the property of which he has to dispose, and of the persons who have a claim upon him, and must appreciate the manner in which he desires his property to devolve. Soundness of mind is not definable, and the law—fortunately for all of us—does not require a perfectly balanced mind, but lays stress upon the functions of memory and understanding. The disposing mind must have natural capacity not unduly impaired by age, enfeebled by illness, or tainted by any morbid influence. It is essential that no disorder of the mind shall poison the testator's natural affections, but it is immaterial if his judgment be perverted by spite, caprice, or frivolity. Where these affections pass into insanity is as difficult to determine, said Mr. Middleton, as the point at which twilight becomes darkness. The extremes, however, are easily recognisable. From the medical man the court wants to know if he has observed in the patient signs of disease of the brain from any cause, and, if so, whether that disease had any direct bearing on the terms of the contested will. Mr. Middleton classified insanity under four heads, which served his purpose, though they would not appeal to the modern psychiatrist: mania, melancholia, monomania, and dementia. Wills made in the "lucid interval" of mania have often been upheld, but no solicitor should draw up a will under such circumstances without medical advice, and proof would be required that power of rational thought had been restored. A diseased state of mind once having been established is presumed to continue. In Cartwright *v.* Cartwright it appeared that the strongest proof of the existence of a lucid interval arises from the act performed during the alleged interval. If that act were a rational act rationally performed without assistance, a lucid interval might be presumed. The principal danger with the melancholic patient is that, through sheer lack of interest in the world about him, he may consent to sign any document placed before him. Under the head "monomania" Mr. Middleton discussed the vexed question of eccentricity and delusions. Psychiatrists know well the amazing power some paranoid patients have of concealing their delusion when it is to their advantage to do so, and they have more than once defeated

skilled cross-examination. Among the "dementias" come the very large and important senile group, and that most difficult of all patients from the testamentary point of view, the general paralytic. Again, as Sir Robert Armstrong-Jones pointed out in the discussion, there is epilepsy, "one of those dominating tyrannical conditions that affects the emotions perhaps more than any other disease."

The jury is faced with the problem of deciding whether or not the deceased was possessed of testamentary capacity. They look to the medical man for a clear and simple account of what he saw and heard when he interviewed the testator. They are happy if their medical witness can describe from notes made at the time his patient's bearing towards the relatives, his memory for recent and remote events, the nature of his delusions, his attitude towards previous wills and any changes made in the most recent of them, and his ability to enumerate, within reasonable limits, his possessions and his dependants. The medical man should always interview the patient alone, save for a nurse or colleague, and ought if possible to see the patient more than once, taking full notes of each interview. The more facts he can lay before the jury, the more likely are they to be able to come to a just decision.

BERI-BERI ON DIFFERENT DIETS.

IN the old conceptions of the ætiology of beri-beri, rice—and often spoiled rice—played the chief part. We know now that rice is not an indispensable factor, though it is a very frequent one. In No. 8 of the Indian Medical Research Memoirs, J. Taylor, C. de C. Martin, and U. Thant describe an interesting study of beri-beri among rice-eaters in Burma; while at a meeting of the Royal Society of Tropical Medicine and Hygiene, on May 17th last, Dr. G. W. Bray gave an account of infantile beri-beri on the Pacific island of Nauru, where the native population never touches rice, but subsists largely on coco-nut products.

Taylor and his co-workers examined the dietaries of a number of the different racial constituents of the population, and concluded that beri-beri is not an important disease among the native Burmese, but is almost confined to the large coastal towns, where it affects imported Indian coolies, not Mohammedans nor vegetarian Hindus to any extent, but chiefly the so-called meat-eating Hindus. It also occurs among Burmans in isolated forest camps, where conditions cause the food-supply to be severely restricted. The disease is shown to have a seasonal incidence, being most prevalent from August to February; it thus occurs chiefly in the wet period, setting in a couple of months after the onset of the monsoon. This greater prevalence in the wet season is tentatively correlated with the greater deterioration, at that time, of stored rice from damp and moulds. Where rice was used which was freshly pounded at frequent intervals, beri-beri did not occur, whereas in exactly corresponding communities, where long-stored rice was used, beri-beri broke out. It is not known whether the moulds introduce a toxic factor, or, as seems more likely, simply make such pericarp as remains on the rice more friable, so that it easily crumbles off and is lost, and with it the vitamin which it contains. It is interesting to see the factor of deterioration restored to its old important place in the ætiology.

The conditions in which beri-beri develops on the island of Nauru show contrasts with those prevailing in Burma. The disease occurs among a population which never touches rice; it affects only breast-fed infants, and its incidence is heaviest in the dry season. Its appearance in the island is only recent and is connected in an interesting way with the political history of the place. The island of Nauru is held by Australia, under mandate from the League of Nations. Supply of alcohol to native peoples in mandated territory is not allowed. In Nauru the intoxicating drink which the natives have used is made from the toddy palm, but now they are no longer supposed to make it. The toddy contains much yeast, and concentrated toddy yeast was found to cure the infants suffering from beri-beri. When a dietary is very limited, interference even with the source of alcohol may cause disaster. A similar instance occurred in the war, when a South African native labour battalion was brought to France; an alteration was made in the preparation of their fermented drink, scurvy developed, and one of the recommendations made to combat it was the return to the usual native method of preparation.[1] The more frequent incidence of beri-beri in Nauru in the dry season is found to be correlated with a special factor, just as the correspondence of the disease with the wet season in Burma was found to be. In wet weather in Nauru the toddy palm yields much more of the fermentable sap from its inflorescence than it does in dry, and although the consumption of toddy by the natives has been much reduced under the mandate, it is not to be supposed that it would ever completely stop. Thus any factor tending to lower the production of this anti-beri-beri agent would operate to increase the number of cases. Among the interesting contributions to the discussion that followed Dr. Bray's communication was one by Dr. W. H. Aykroyd, who described beri-beri in Newfoundland, where the dietary consists chiefly of white bread and salt meat. He had noticed there that the majority of the cases, 80 per cent. of the whole, were males, and he believed that some social factor must operate to produce this result, but he did not yet know what it was.

SYPHILIS REFRACTORY TO TREATMENT.

THE term "malignant syphilis" is applied somewhat loosely to two distinct groups of cases—namely, those in which the eruption is severe and profuse, with or without profound constitutional symptoms, and those in which the manifestations are refractory to treatment, or recur during the actual administration of modern remedies. A case from the latter group, examples of which occur from time to time in every venereal clinic, is reported in the *Dermatologische Wochenscrift*, June 2nd, p. 727. A man, aged 42, received the usual arsenical and bismuth course for a profuse secondary eruption. Fourteen days later condylomatous lesions recurred on the tongue and round the anus, although the Wassermann reaction was negative. Renewed antiluetic treatment brought about the disappearance of the lesions and a positive W.R. The first mercurial injection of the third course was followed by an urticarial syphilitic eruption, and the W.R. became negative again. This eruption was uninfluenced by intensive treatment with neosalvarsan, bismuth, and iodides, but the W.R. remained negative. An intracutaneous injection was given of syphilitic vaccine from rabbit chancres ("luotestin," 0·2 c.cm.); pronounced local and focal reaction in the lesions followed the first injection, and after the second the W.R. became positive. The third injection resulted in the involution of the eruption. Four more doses of luotestin were given, and the treatment was then purposely stopped. Ten days later there was a gyrate macular rash on the trunk and syphilitic papules on the right tonsil, and now the W.R. was, as it should be, positive. Another injection of luotestin and a small dose (0·15 g.) of neosalvarsan promptly cleared up both these manifestations, which had not recurred at the time of reporting the case. It will be noted that an abnormally reacting organism, indicated by the urticarial eruption, negative W.R., and refractiveness to salvarsan, was converted into a normally reacting mechanism, as evidenced by the macular eruption, positive W.R., and receptivity to salvarsan. Rosner's view that the negative W.R. during the eruptive stage is a sign of defective natural protection is one which will be shared by most authorities, and it seems probable that the injections of luotestin to some extent stimulated production of antibodies. This would explain the appearance of local and focal reaction in the rash itself, but does not altogether

[1] H. W. Dyke: THE LANCET, 1918, ii., 513.

account for the paradoxical gyrate eruption with tonsillar lesions that followed ten days after the seventh injection of luotestin. Rosner suggests the word "contra-reaction," and raises the question of an altered response of the blood-vessels in the lesions, leading to their paradoxical contraction, with dilatation of vessels in the vicinity. The theory is too conjectural for further consideration at present, but there is no doubt that administration of luotestin and similar protein bodies, which may or may not be specific, have a practical bearing on the treatment of salvarsan-refractory types.

THE CAUSE OF SUDDEN DEATH IN CRIMINAL ABORTION.

AN adequate explanation of sudden death during criminal attempts to procure abortion is still to seek; in medico-legal cases the cause has often been ascribed to shock, but this view has not met with general acceptance. Sudden fatalities are so rare in legitimate operations that they have never become associated in the minds of obstetricians with the therapeutic induction of abortion, the evacuation of an incomplete abortion, or the closely allied procedures of dilatation, exploration, and curetting of the uterus. Few even of those with a long and varied experience of hospital and special practice have met with a single case. To explain this apparent anomaly factors peculiar to the special circumstances in which criminal abortion is attempted have been invoked, such as mental distress, fear, and other emotional states in the patient, or haste, lack of skill, or faulty methods in carrying out the manipulation. The economic stress of the war and post-war years in Central Europe has greatly increased attempts to procure abortion, and the mortality accompanying it has drawn attention to the causes of death or of serious complications. In Germany the method commonly adopted is the injection under pressure of fluids, usually soapy water, into the uterus. According to H. von Hoesslin [1] this manipulation is not infrequently followed by sudden and dangerous symptoms, either cardiovascular or cerebral in origin, and a non-fatal case of the latter type is recorded and discussed in the light of others collected from German literature. As it is almost impossible to avoid the injection of air with the fluid, death is frequently ascribed to air embolism, and von Hoesslin's interpretation of his case in the absence of post-mortem investigation is that the quantity of air in the cerebral arteries was too small to cause serious circulatory disorder but was sufficient to interrupt temporarily the nutrition of the delicate cortex. The case he recorded was that of a woman of 26, who collapsed and later became unconscious after the injection into the uterus, at high pressure, of a soap solution. The patient was soon after admitted to the Hamburg-Eppendorf Hospital where she had several left-sided epileptiform convulsions, and on the day after admission expelled a dead fœtus. The urine was free from albumin and sugar, the Wassermann reaction was negative, and lumbar puncture gave no evidence of raised pressure. There were no further fits and consciousness began to return after the fourth day, though the patient had a right-sided paresis, remained drowsy, and complained of severe headache for some time longer. All symptoms gradually cleared up and she was discharged well in four weeks. The passage of blood containing air-bubbles through the pulmonary capillaries is shown to be possible by experimental work on animals. It has been stated, also, that in 30 per cent. of mankind the closure of the foramen ovale is imperfect to a degree sufficient to permit frothy blood to escape from the right to the left side of the heart. When death results from circulatory disturbance following the introduction of air into the vessels the cause would appear to be frothing of the blood on the right side of the heart; in less acute cases there may have been penetration into the coronary veins of chains of bubbles working against the current and the consequent production of cardiac failure. This sequence of events has been produced experimentally in animals by L. Jung and L. Auger.[2] The great importance of learning the real explanation of sudden death in criminal abortion makes it essential that every case of the kind should be carefully investigated, and the possibility of air-entry into the circulation is one that should be fully explored.

[1] Münch. Med. Wochenschr., 1928, lxxv., 764.

FRACTURES SET BY MACHINERY.

Dr. John J. Moorhead, of New York, describes [3] a method of reducing displacement in fractures of the long bones, which he considers superior to those now in use. Plaster-of-Paris cases are applied above and below the seat of fracture and traction and counter-traction are applied through them. The distal portion of plaster is connected with an electromotor which can be regulated so as to exert any amount of undulating force likely to be desirable. When the surgeon is satisfied that correction has been attained, the motor is stopped in the position of maximum pull and the gap between the plasters is filled in with more plaster-of-Paris. The apparatus is not fully described in the paper, nor are the illustrations of much help in elucidating the details of the mechanism, but we gather that the minimum desired degree of tension is produced by a hand screw, superimposed upon which is the alternating pull of the electromotor. The alternate pull and relaxation is produced by an eccentric. The apparatus is obviously not one for every practitioner to keep in his surgery, and is only likely to be used in casualty departments of hospitals which deal with a large number of fractures. Radiograms are reproduced from a case of compound fracture of both leg bones, treated by this method, but judging, as we must, by this one case, we feel no certainty that its results will be any better than those obtainable by less elaborate methods. It seems probable that traction will have to be maintained at its maximum for a good many hours while the fresh plaster is setting to a sufficient degree to resist compression, and that trouble is likely to arise from this pressure. The final radiogram does not show a perfect anatomical result, although functionally it may be perfect. A costly and elaborate apparatus such as this must justify its introduction by improved results after repeated tests if it is to gain a permanent place in the surgical armamentarium.

PERMANENT ENLARGEMENT OF A CONTRACTED PELVIS.

THE permanent enlargement of a contracted pelvis by means of bone-grafts has been effected in two cases by Dr. F. H. Albee.[4] The technique involves a horizontal incision of the symphysis pubis, section of the pubic ligaments, and separation of the innominate bones at the symphysis. A graft taken from the tibia is then inserted in the hiatus between the innominate bones, and is sutured in place with kangaroo tendons. The author explains that the graft method has the advantage over symphysiotomy and pubiotomy that these may have to be repeated at each pregnancy, while the enlargement of the pelvic ring by bone-graft is permanent. Another reason given by Dr. Albee for his preference is that, in his experience, the force required to separate the bones is very great, and he considers it undesirable that this force should be exerted wholly through the presenting part of the child as it must be after symphysiotomy. Presumably he is here considering the child, for it seems doubtful whether for the mother a sudden severe wrench would be any more desirable. Many surgeons, especially in America, believe that the sacro-iliac joints are liable to give rise to painful symptoms, even when so far as can be ascertained they have not

[2] Compt. rend. de la Soc. de Biol., 1928, xcviii., 702.
[3] Amer. Jour. Surg., May, 1928, p. 525.
[4] Surgery, Gynecology, and Obstetrics, 1928, xlvi., 845.

been subjected to undue strain. A permanent wedge, for the insertion of which the bones have had to be separated 1½ inches, must surely cause tension of ligaments, if not some degree of displacement of these joints. It is recorded that both patients operated on were delivered of normal children after operation; one of them has since had three normal labours. We are not told, however, whether they are free from backache or other symptoms which might be expected to follow such a gross insult to the skeletal frame. Indeed, the case reports which form part of Dr. Albee's article are somewhat meagre, and though there was doubtless justification for drastic action, little evidence is submitted on this point. In one of the patients no trial labour seems to have been allowed, and the report of the obstetric history of the other, who had had a craniotomy, gives no details of the events leading up to a catastrophe which might have been due to causes other than a contracted pelvis. Obstetricians are constantly being asked to perform Cæsarean sections on patients who subsequently deliver themselves without interference, and it must be emphasised once again that convincing proof of the impossibility of normal delivery should be forthcoming before any operative procedures are contemplated.

CARDIAC PAIN IN RHEUMATIC FEVER.

IT may be assumed that in acute rheumatic fever præcordial pain with hyperalgesia generally means involvement of the heart. The subject has now been studied statistically by Dr. H. F. Swift and Dr. C. F. Hitchcock,[1] who have investigated 154 cases of acute rheumatic fever over a period of more than seven years. They show that the frequency with which præcordial pain and hyperalgesia is encountered is roughly proportional to the intensity of the rheumatic infection, and hence to the frequency of cardiac involvement. While the absence of cardiac pain during the acute attack does not necessarily show that the heart has escaped injury, its presence is strong evidence of damage to the valves. Præcordial pain with hyperalgesia is observed more often during recurrent rheumatic fever than during the first attack. In the first attack of fever two-thirds of the patients with præcordial pain showed other evidence of cardiac involvement, and almost all the remainder developed cardiac lesions later, or during subsequent attacks. Incidentally, Swift and Hitchcock confirm the well-known observation that patients with subcutaneous rheumatic nodules almost always have concomitant signs of cardiac involvement. They point out that as our knowledge of the nerve-supply of the heart is still incomplete, any conclusions about the mechanism by which the pain arises must be mainly tentative. It may be noted, however, that the cardiac lesions of rheumatism are in the perivascular and adventitial tissues, and that the evidence goes to show that the cardiac tissues capable of giving rise to painful sensations are mainly situated in the epicardium, pericardium, and the adventitial coats of the aorta and coronary arteries, the endocardium and myocardium being probably insensitive. They think that the pain associated with pericarditis is not due to mechanical irritation by rubbing, but rather to the intensity and nature of the underlying inflammatory process. A pericardial rub may often be heard in patients who have no pain, and an extensive pericarditis may be discovered at the autopsy of a patient who has never had præcordial pain. On the other hand, severe pain may be felt before clinical evidence of pericarditis is manifest. Signs of rheumatic pericarditis are almost always accompanied by evidence of valvular and myocardial involvement, but valvulitis and myocarditis of equal severity may occur without pericarditis, and in these cases similar præcordial pain is often present. "It seems, therefore," they say, "that the præcordial symptoms which have been described and attributed to pericarditis by many observers are merely indicative of the severity of the pancarditis."

[1] Jour. Amer. Med. Assoc., March 3rd, p. 678.

THE PROVISION OF GLASSES FOR VERY FINE WORK.

EYESTRAIN among persons performing very fine work is presumably due partly to excess of accommodation required, partly to excess of convergence. An investigation just carried out by the Industrial Fatigue Research Board[1] concerns two sets of workers, the one engaged in the mounting of lamp filaments, the other in a process of threading for the loom in which a thread has to be drawn through as many as 123 eyes per inch. The mounting of lamp filaments was the finer work and for this purpose glasses were provided which added 4 dioptres of accommodation for each eye and 6 degrees converging prisms for work at about 6 inches. At the same time any error of refraction was corrected. The result was an increase of output, though this was slight among those who were previously the best workers. To loom workers the relief given was 2 dioptres of accommodation and 4 degrees converging prisms in addition to the distance correction. Here also the result was favourable, and Mr. T. G. Clegg, who prescribed the glasses, attributes the improvement chiefly to the relief afforded by the convex prisms. The objection is obvious that this wholesale treatment does not sufficiently take into account individual requirements. The need for relief might well be present at the age of 30 when the average accommodation is about 8 dioptres and absent at the age of 20 when it is about 11 dioptres. The power of convergence again is one that varies greatly in different individuals not only with age but with general health and, of course, with muscle balance. Fatigue is liable to ensue, according to Landolt, if more than one-third of the converging power (reckoned in metre-angles) is continuously called upon. Among those workers whose refraction is not normal the wearing of glasses with distance correction would by itself do much to diminish fatigue. But psychological factors, especially the influence of suggestion, cannot be ignored when the results are being assessed, while the incidence of physical fatigue from causes not primarily connected with the eyes has also to be considered. The outcome of this study is that the provision of glasses relieving both accommodation and convergence for very close work has, on the average, a beneficial effect, but to what extent the efficiency of any particular worker may be enhanced by their use cannot be judged without detailed investigation.

THE SHEFFIELD MEDICAL SCHOOL.

THE celebrations to be held next week at Sheffield in connexion with the centenary of the medical school, now the medical faculty of the University of Sheffield, recall to all who would learn of the development of medicine in this country a very interesting page in history. The story has been well told by the late William Smith Porter, senior physician to the Sheffield Royal Infirmary, whose delightful essay on the subject has just been published, and deserves to be widely read. This story commences in July, 1828, but previous to this date a Sheffield surgeon, Mr. Hall Overend, had begun to make collections for a museum of anatomy, human and comparative, the use of which by his apprentices and those of his neighbours was providing a quite unusually good scientific training to Sheffield students. The museum was the private property of Hall Overend and his son, Wilson Overend, but when, in 1828, a movement was promoted by a Sheffield physician, Sir Arnold Knight, and others for the establishment of a medical school in the city, it was proposed to utilise the Overend Museum. This was sheltered in a wing of the Overends' house, and when this building was contemplated as the

[1] On the Relief of Eyestrain among Persons performing Very Fine Work. By H. C. Weston, M.J.Inst.E., and S. Adams, M.Sc. Industrial Fatigue Research Board Report No. 49. H.M. Stationery Office. 1928. 1s. 3d.

nucleus of the new school the troubles that arose from the proposal to employ private property for public purposes were inevitable. For one group of medical men, out of a recognition, no doubt, of the Overends' pioneer labours, desired to maintain the Overend Museum as a permanent centre of the new school, while another group, foreseeing the complications that might ensue, wished to make a new start, taking the form of a Medical Institution. The term "school" was not employed in connexion with this later movement, which was directed rather to the formation of what would now be considered a learned society, and this perhaps accounts for the fact that in the first instance the Overends, father and son, appear to have been quite friendly to the scheme. But the new Medical Institution soon became the centre of medical education in Sheffield, in accordance with the prevailing views for the training of students, and thus for a short time Sheffield possessed two rival schools, with the disagreeable division of opinion thus implied. But the dissension came to an end dramatically by the disappearance of the Overend Museum. The Museum itself had been removed from the back of the Overends' house, owing to the feeling that pathological specimens were inconvenient property to have on domestic premises at a time when the public feeling against body-snatching was so high. And the action was certainly prudent, for in 1835 the Museum was sacked and destroyed by a mob, inflamed by the accounts of the Burke and Hare atrocities. But although the Sheffield School of Medicine did not have its material start in the Overends' Museum, Dr. Porter says, and all will agree with him, that Hall Overend was the true founder of the Sheffield medical school. The rise of an entirely independent institution was the only sound method to ensure permanency for the ideals of the Sheffield citizen, but the ideals themselves were implanted by Hall Overend.

While the beginnings of the Sheffield School of Medicine are quite clearly chronicled, the next stage appears to have escaped public notice generally, for even the Sheffield Local Registers are silent as regards the school between the years 1835 and 1850. Evidently the school showed no promise of great developments before the year 1883. But in that year the association with the Firth College wrought a magical difference in outlook and performance, and four years later the foundation-stone of the new school in Leopold-street was laid, after which the record of success becomes progressive. Of the growth from a university college to a faculty of medicine in a university nothing need be said, as such recent medical history must be familiar to all our readers. We follow Dr. Porter in quoting the concluding words of the inaugural address at the foundation of the Sheffield School of Medicine in 1828. "If it be competent," said Sir Arnold Knight, "to supply that knowledge which the increasing wants of an improving profession so urgently require—if it be calculated to advance the interests of the general practitioner—if by increasing the intelligence it add to the dignity of the profession and render its honours still more an object of ambition among the truly great—if by promoting professional skill it tend to alleviate the sufferings of mankind . . . then will the Sheffield Medical Institution succeed: and it will succeed—because it will deserve success." No doubt these words were greeted one hundred years ago with an approval that their powers of prophecy deserved.

A DINNER TO SIR ROBERT JONES.

ON Thursday, June 28th, a group of surgeons—friends, colleagues, and pupils—entertained Sir Robert Jones to dinner at the Café Royal, London. A book, specially written for the occasion and entitled The Robert Jones Birthday Volume, was presented to him, comprising a collection of surgical essays written by experts in his own subject with full knowledge of the position occupied by Robert Jones. This feeling was admirably set out by Sir Berkeley Moynihan, who was in the chair, in a speech distinguished alike by its brilliance and its affectionate intimacy. As an indication of the feelings which prompted the tribute, a few of Sir Berkeley's actual words may be quoted:—

"This volume, written by a band of brothers, is dedicated with greatest respect and with warmest affection to Sir Robert Jones on the occasion of the seventieth anniversary of his birth. The opportunity to pay tribute to our friend, in whom we recognise one of the masters of surgery, was most eagerly welcomed. We felt that it gave us the chance to say openly what has long been in our hearts, in regard to his work for our profession, and in acknowledgment of the inspiration, encouragement, and example he has given to all who have had the high privilege of association with him. All those who contribute to this volume are proud to think that the influence of Robert Jones, of his methods, and of his teaching has inspired them, has found a place in their work to be transmitted by them in due time to their successors. Spirit alone is immortal. In the practice of orthopædic surgery the spirit of Robert Jones will live for ever. To Robert Jones, great surgeon, inspiring teacher, loyal colleague, and good friend, we affectionately inscribe this volume."

In addition to Sir Robert's daughter and son-in-law, Mr. and Mrs. Frederick Watson, and his son and daughter-in-law, Mr. and Mrs. Arthur Probyn Jones, the following were present: Sir Berkeley Moynihan, Sir Harold Stiles, Sir John Lynn-Thomas, Mr. E. Muirhead Little, Prof. Murk Jansen, Mr. A. B. Mitchell, Dr. Thurstan Holland, Sir William de Courcy Wheeler, Mr. E. Laming Evans, Mr. H. A. T. Fairbank, Prof. E. W. Hey Groves, Mr. R. C. Elmslie, Mr. A. S. Blundell Bankart, Mr. W. Rowley Bristow, Mr. Naughton Dunn, Mr. G. R. Girdlestone, Mr. Harry Platt, Mr. D. McCrae Aitken, Mr. W. H. Trethowan, and Mr. T. P. McMurray.

INTERNATIONAL STANDARDISATION OF DIGITALIS AND ERGOT.

THE first insight obtained by any student into the principle of international units of measurement dates from his school days. When he opened his first textbook on physics he learned with surprise that the metre, which was the familiar basis of many of his sums, could be defined with accuracy only as the distance, at the temperature of melting ice, between two marks cut in a bar of durable metal preserved in Paris. It would be absurd to pretend that such precise standards will ever be available in the sphere of pharmacology or therapeutics, but their development on scientific lines must depend largely on the extent to which it is possible to set up units of measurement common to all countries. The practitioner has hitherto not been very exacting in his demands for standardised drugs, or, indeed, very receptive to suggestions from pharmacologists that a popular mixture is not necessarily a potent one. He has been content to assume that the preparations of such drugs as digitalis, squill, and ergot in common use are of uniform strength without inquiring closely into the grounds for this assumption. Recent research has shown that his confidence is misplaced, and that the great variations in clinical response which he has doubtless attributed to the idiosyncrasies of the patients are at least as likely to be due to the differences in the activity of the drug exhibited. The Health Organisation of the League of Nations is thus doing most valuable work by collecting together experts from all countries with the idea of devising tests for the potency of those therapeutic substances which cannot be standardised by purely chemical means. The permanent Commission appointed by the League to consider the standardisation of sera, serological reactions, and biological products have already dealt with salvarsan, insulin, and pituitary extract on these lines, and the report [1] of their last session, held at Frankfort in April last, shows that they have made considerable progress towards the establishment of a uniform international unit for preparations of digitalis

[1] Publications of the League of Nations: Health, 1928, iii., 6.

The late Prof. Rudolf Magnus of Utrecht was asked in 1925 to make a dried powdered preparation of the leaves of *digitalis purpurea* of a certain strength. He was instructed to use for this purpose a mixture of 10 different powders, made from leaves properly dried at 55–60° C., to adjust its activity by biological assay on cats, and to distribute the preparation for international use. The activity of the standard product was to be controlled by annual tests, and if it should deteriorate, or the supply become exhausted, a new preparation of equal activity was to be made. This work was duly carried out, and favourable reports on the standard product have been received from various countries. The Commission of the League of Nations have therefore decided definitely to adopt the preparation for international use. Arrangements for renewal of the standard have had to be reconsidered owing to the death of Prof. Magnus, and Dr. Bijlsma, of Utrecht, has been entrusted with the task. Only when the new standard has been proved by various biological tests—such as intravenous infusion in mammals or the lethal dose method in frogs—to be identical in activity with the existing one, will it be forwarded to the National Institute for Medical Research for distribution on behalf of the League of Nations. In future, when the dosage of digitalis or its preparations is expressed in units of activity, the unit employed will be the specific activity contained in 0·1 g. of the international standard powder. As to ergot, in view of the results of recent clinical work,[2] showing that the essential factor in the activity of ergot on the uterus is the action of the specific alkaloids, the Commission have decided to proceed with the standardisation of ergot and its preparations by a method measuring its content of the specific alkaloid (ergotoxine or ergotamine). For this purpose the method of Broom and Clark, using the isolated uterus of the rabbit, will be adopted. The possibilities of preparing a stable standard for squill are now being explored. When such popular drugs as digitalis, ergot and squill have been added to the list of standardised substances, some important obstacles to the correlation of clinical impressions with experimental observations will have been removed.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointment has been notified:—Surg. Comdr. G. H. Hayes to *Barham*.

ROYAL ARMY MEDICAL CORPS.

Col. F. J. Brakenridge, late R.A.M.C., retires on retd. pay on reaching the age for retirement.

Lt.-Col. T. E. Fielding, from R.A.M.C., to be Col., vice Col. F. J. Brakenridge.

Maj. J. P. Lynch to be Lt.-Col., vice Lt.-Col. T. E. Fielding.

Capt. T. S. Law to be Maj.

ARMY DENTAL CORPS.

The undermentioned Lts. (on prob.) to be confirmed in their rank: R. G. J. Tovey, A. K. Inglis, W. McD. Birse, W. P. Baxendine, and N. I. Macmillan.

TERRITORIAL ARMY.

Capts. R. B. Lilly and I. J. Williams to be Majs.

2nd Lt. H. R. Vernon (late R.F.A.) to be Lt.

H. A. Eccles, L. D. Williams, and J. Wright to be Lts.

General Hospitals: Maj. J. Wallace, from Gen. List, to be Lt.-Col. and to comd. the 13th (4th Lond.) Gen. Hosp., vice Lt.-Col. (Bt. Col.) A. H. Gosse, vacated.

ROYAL AIR FORCE.

Flying Officer J. Hill is promoted to the rank of Flight Lieutenant.

INDIAN MEDICAL SERVICE.

The undermentioned officers retire: Lt.-Col. A. Murphy and Maj. A. Seddon (on account of ill-health).

[2] See THE LANCET, 1927, ii., 560.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXXIII.

THE SURGICAL TREATMENT OF CHRONIC INFECTIONS OF THE SEMINAL VESICLES.

CHRONIC infections of the seminal vesicles are responsible for a considerable amount of ill-health, causing as they do persistent urethritis with unfitness for marriage, sterility, crippling arthritis, myositis, relapsing cystitis with rigors, epididymitis, and many other complications of "subinfection" or "intermittent bacteriæmia." Local urethral treatment, diathermy, vesicular massage, intravenous injections of neosalvarsan, or protein shock therapy will often bring about a cure. But many cases remain where cure can be hastened or can only be attained by lavage of one or both seminal vesicles by way of the vas. The operation of vasostomy or vasotomy, devised by Belfield,[1] of Chicago, in 1905, since modified by him and others in many important particulars, and performed by him on more than 1100 patients, should be more widely known and practised in this country, since recent improvements in technique have done away with complications which at first proved troublesome and caused the operation to be viewed with disfavour.

The operation has been criticised chiefly on the ground that if it is not properly carried out it may lead to a stricture of the vas with consequent sterility. Quite apart from the fact that most of the patients who need the operation are already sterile as the result of the disease of the vesicle, it is now known that stricture of the vas should not follow the operation when performed according to the latest technique; and, indeed, it is likely to render fertile many perons who without it would be condemned to permanent sterility. It appears, from numerous observations and experiments, that colloid silver, or other chemical, when injected into the lumen of the seminal tract does not injure in any way the epithelial lining of that tract. On the other hand, if colloid silver or other chemical be permitted to leak into the interstitial tissues around the vas, funiculitis may be produced, and in some cases lead to a stricture of the vas at the site of the incision. Such a condition can be remedied by the perfected operation of vasectomy with end-to-end suture. But with the new technique of vasotomy this necessity is not likely to arise. For instance, Dr. Clinton Smith, of Kansas City, reported 100 consecutive cases in which he was able to test the sperm at long intervals after the operation. In 98 of the cases living sperm was found. The chances, then, of sterility seem remote.

All who have had extensive experience of this operation are now pretty well agreed that attempts to leave a cannula in the vas for repeated washings should be given up. It was these attempts that led to reflux of the chemical injected and to subsequent stricture formation. It was found that stricture might result whatever chemical antiseptic was used for the injection. It was not the nature of the antiseptic, but it was the reflux of the antiseptic into the interstitial tissues that caused the stricture. Since colloid silver is found in practice to be the most efficient antiseptic, it should be used in preference to any other so far suggested, such as acriflavine.

The operation should not be carried out in the out-patient department. Patients should be confined to bed for two or three days at least, preferably four to five days.

Technique of Vasotomy.

The operation can be carried out under local or general anæsthesia. If a local anæsthetic is preferred, it is administered as follows. Pick up

[1] Jour. Amer. Med. Assoc., 1905, xliv., 1277.

the cord at the top of the scrotum and inject into its substance 5 c.cm. of 1 per cent. novocaine adrenalin solution. Choose the site of the skin incision near the top of the scrotum and inject along this with a fine needle some 10 c.cm. of ½ per cent. novocaine adrenalin solution.

The vas should be isolated beneath the scrotal skin with the gloved fingers or a special clamp and a small incision be made directly down until the coverings of the vas are exposed. The vas is caught by a pair of sharp-toothed Volkman's forceps and held up in the left hand. With a few touches with a sharp knife the outer coatings of the vas are cleared until the flat handle of a scapel can be gently insinuated between the vas and the other structures of the cord. This is thrust through so as to keep the vas well out of the wound, after which any bleeding points that need attention should be securely ligatured. The vas must be well cleared of the surrounding tissue sheaths, an important point. With a fine-pointed tenotone a tiny opening is now made in a longitudinal direction through the wall of the vas so as to expose the lumen. This can soon be learnt by practice and is the most delicate part of the operation. A fine stiff length of silkworm-gut is now threaded into the vas and will usually pass easily for some 10 in. towards the vesicle. In some cases inflammatory strictures of the vas or inspissated pus will prevent the passage of this gut, in which case it may be thought advisable to desist from injecting the vas. If the lumen is patent a thin sling of gauze is inserted under the handle of the scapel to steady it and catch any drops of escaping fluid. A blunted needle (gauge 20) attached to a well-fitting syringe filled with 10 c.cm. of 5 per cent. colloid silver is insinuated into the lumen of the vas, great care being taken not to rub up the mucous membrane with the point of the syringe. Those who have had little practice are advised to inject sterile water to see if the passage is clear before resorting to the main injection. Five c.cm. of 5 per cent. colloid silver are then slowly injected and should flow easily away to fill the vesicle and ampulla. If 5 c.cm. flow in quite easily, a further 5 c.cm. may be injected. After a pause the syringe is removed and the opening in the vas most carefully closed with one or two 00 catgut sutures. These sutures should only take up the outer coat of the vas and should effectually prevent all reflux of the chemical injected. The vas is then dropped back into place and the skin united with a catgut stitch.

The patient should be confined to bed for at least three or four days to prevent complications, as a little fever is not unusual. The colloid silver may not appear in the urine for many days after the injection. In such cases the effect is always curative. Cures of the infected vesicle will be obtained in the majority of the cases by one injection. If a cure is not attained, then the vas can be exposed a second time a week or ten days later, and the injection repeated at a site a little higher up. In this way risk of stricture and sterility is avoided and the desired result is obtained.

Indications for the Operation.

The agreed indications for the operation are as follows: In all cases of non-tuberculous seminal vesiculitis without intense perivesiculitis refractory to non-surgical treatment due to the gonococcus, colon bacillus, streptococcus, and other pyogenic bacteria: (*a*) causing a chronic urethral discharge; (*b*) aspermia or necrospermia with sterility; (*c*) bacteruria and rigors; (*d*) arthritis or myositis; (*e*) attacks of recurrent epididymitis; (*f*) chronic cystitis following prostatectomy.

The diagnosis is established especially by careful rectal palpation of the vesicles with the trained and expert finger, the presence of necrospermia and pus in a condom specimen of the sperm, persistent relapsing swellings of the epididymis, and bacteriological investigations of the spermatic fluid. Experience can alone decide as to whether the operation must be carried out on one or both sides in any particular case. It is not always necessary to operate on both sides.

Vasotomy in Gonorrhœa.

Recently vasotomy has been advocated for all cases of acute gonorrhœa. I have been so impressed by the immediate and rapid cure of cases of chronic vesiculitis where no other treatment has been employed, except a single lavage of one or both vesicles, that I am quite prepared to believe that lavage of the vesicles on one or two occasions might rapidly cure recent acute gonorrhœa. Kenneth Walker's experiments on animals and certain clinical features of urethritis are suggestive in this connexion. The results of experience can alone decide such a question. The operation of vasotomy has come to stay. It must remain an operation to be practised only by those who are willing to give up some time to learning accurately the technique, and should not be condemned by those who have had no experience of it or who refuse to follow the minute steps necessary for success. I have had many striking results with it in a series of extremely difficult cases.[2] I cannot too strongly call for its consideration by those who are in charge of venereal disease clinics and military and naval hospitals.

FRANK KIDD, M.Chir. Camb.,
Consulting Surgeon to St. Paul's Hospital.

PRESENTATION TO MR. WHITE WALLIS.

WITH 4700 members and a progressive Council the Royal Sanitary Institute has established itself as an organisation which has an important place in the community. Every year it arranges some 250 meetings and lectures in various parts of the country; it conducts examinations for health visitors, and organises those which qualify sanitary inspectors; it annually distributes 60,000 copies of a journal reaching a high standard of public interest; it keeps up a valuable museum visited by large numbers of people; and it has rendered excellent service in arousing interest in sanitary science throughout the Empire, branches having been established in most of the Overseas Dominions. While this steady development has been the work of many hands, it is largely due to the assiduous and capable service of the permanent staff, of which Mr. E. White Wallis, O.B.E., the secretary and director, has been the principal member for 48 years. Mr. Wallis has shown himself a skilful organiser, equipped with imagination and foresight. His gifts have been applied unceasingly to the work which he undertook in 1880, and his success as a manager must be evident to all who have attended the congresses of the Institute or studied its history. At the dinner at the Café Royal, given in his honour on June 27th, the Duke of Northumberland, President of the Institute, was unfortunately prevented from taking the chair as he intended, but Prof. Bostock Hill, who took his place, clearly expressed the feeling of the company when he said that Mr. Wallis's services, both in quantity and quality, must be almost unrivalled. After a presentation had been made, Mr. Wallis referred to the widespread activities of the Institute, which had now, he said, attained a standing which would form a foundation for future work and development. In this development we hope that he will continue to take an active share.

[2] THE LANCET, 1923, ii., 213.

AMERICAN BEDS AT THE ROYAL FREE HOSPITAL.—Last week Mr. Horace Lea Washington, United States Consul-General, presented the endowment and name-plate of the "Martha Washington" bed for which £1000 has been given by the American Women's Club. At the same time Lady Hewart presented a cheque for £400 for the endowment of a "Louisa Mary Alcott" crib.

Special Articles.

DEATHS AND DEATH-RATES IN THE MERCHANT MARINE, 1926.

By Fleet-Surgeon W. E. Home.

A return[1] published by the Board of Trade summarises the deaths that occurred in 1926 in the mercantile marine. No death-rate for seamen is prepared by the Board of Trade, on the ground that no precise knowledge is available of their number, but only of their deaths. The Board does, however, allow that "the numbers of persons forming the first crews of vessels," stated annually in the above-mentioned return, furnishes "an approximate basis for estimating the variations in the extent of the risk from period to period." I have prepared Table I., attempting to use such data as is available from the return and from the Registrar-General's Decennial Supplement on Occupational Mortality (1927, H.M. Stationery Office, 7*s.* 6*d.*), in which (pp. 126–128) is a discussion of the mortality of seamen, 1921–23. This supplement did not appear till 1928.

The total number of deaths of employed or occupied sailors is known, and their causes are nowadays, we are told, being more correctly stated. It is the average daily number of seamen amongst whom these deaths arise of which we are uncertain. Every year the numbers in the "first crews" of ships are published, and every five years a census is taken of all seamen in seagoing vessels, registered in the British Islands, except yachts and fishing boats. This census, taken all over the world on a single day in 1901, 1911, and 1921, showed a number much less than the number given in the return of persons forming "first crews," the proportion being respectively 82 per cent., 81 per cent., and 55 per cent. in the three years. The census in 1921, the latest available, was taken during a coal strike, attended with great unemployment for seamen. What proportion of "first crews" can we then assume to be the number usually employed? I submit that 90 per cent. would in ordinary times be near it, and in 1921 70 per cent., and that these figures may be used, in the words of the Board of Trade, as "an approximate basis for estimating the variations in the extent of the risk." The Board of Trade gives no suggestion of its own idea of these variations, nor until this year has any official figure been put forward; even now no figure is given for occupied seamen, but only for occupied and retired seamen together.

Table I.—*Deaths and Death-rates in the Merchant Marine.*

	1901.		1911–12.		1921.		1926.	
No. of "first crews"	146,860		165,159		173,110		159,950	
Percentage taken	90		90		70		90	
No. of men taken	132,170		148,640		121,177		143,995	
	Deaths—		Deaths—		Deaths—		Deaths—	
	No.	Per 1000.	No.	Per 1000.	No.	Per 1000.	No.	Per 1000
Enteric	35	0·27	58	0·39	27	0·22	28	0·19
Small-pox	17	0·13	8	0·05	4	0·03	7	0·05
Malaria	28	0·22	31	0·21	40	0·33	13	0·09
Tubercle (all)	45	0·34	44	0·29	26	0·21	41	0·28
Pneumonia	50	0·38	52	0·35	56	0·46	63	0·44
Diseases of the circulatory system	126	0·96	88	0·59	55	0·45	56	0·39
Suicide	69	0·52	46	0·30	30	0·25	30	0·21
All diseases	555	4·20	519	3·50	362	2·99	410	2·85
Alcohol	120	0·91	111	0·74	42	0·35	31	0·21
All violence	978	7·40	1503*	10·11	461	3·80	448	3·11
All causes	1653	12·50	2133	14·35	865	7·14	889	6·17

* 604 (4 per cent.) drowned in *Titanic.*

In Table I., then, is a statement of death-rates in the merchant marine in 1901, 1911, 1921, and 1926, with the numbers of "first crews"; the number of men supposed to have been daily on board ships in each year, and the deaths from certain causes are also given. The greatest decrease in death-rates in the quarter of a century is in those from alcohol, from 120 deaths (death-rate 0·9) in 1901 to 31 (0·2) in 1926; but the rates for enteric, small-pox, diseases of the circulatory system, suicide, and "all diseases" have satisfactorily decreased, for tuberculosis (all forms) rather less, while those for pneumonia seem larger. Except as regards alcohol and suicide the decrease is not large enough to dispel anxiety about the health of the merchant marine. Is it improving in health as rapidly as is the population ashore?

Table II. sets out the death-rates of the merchant service in 1926, obtained as has been described, against those of the Navy (1925) and the Army (1926), taken direct from their reports published this year. The death-rate of the Air Force (1926) is calculated from the figures of deaths given in that report, which is concerned with a much smaller total of men than are those of the other services. Next come the merchant service figures of 1926, followed by two columns, calculated from figures on p. 128 of the Decennial Supplement about which some remarks must be made.

Table II.—*Death-rates in the Services and the Merchant Marine.*

—	Navy. 1925.	Army. 1926.	R.A.F. 1926.	Merchant marine. "Occupied," 1926. Board of Trade.	Merchant marine. "Occupied and retired," 1921–23. Registrar-General. Ages 20–45.	Merchant marine. "Occupied and retired," 1921–23. Registrar-General. Ages 20–65.
No. of men	90*	190*	33*	144*	155*	200*
Enteric	0·03	0·06	0·1	0·19	—	—
Tubercle (all)	0·40	0·17	0·2	0·28	2·2	2·1
Pneumonia	0·15	0·31	0·2	0·44	—	—
Dis. of circulatory system	0·15	0·11	0·15	0·39	—	—
Suicide	0·11	0·14	0·2	0·21	—	—
Accidents	1·32	0·74	3·39	3·11	3·10	3·4
All causes	2·82	2·35	4·6	6·17	10·4	13·5

* Thousands.

When that Decennial Supplement was being prepared some doubts were thrown on the statistics of the occupational mortality of seamen presented in the corresponding report for 1901. These doubts were considered by a departmental committee and (p. 126) it was decided that some better system of measuring the occupational mortality of seamen should be devised; the figures in the last Decennial Supplement are the result.

The uncertainty about the numbers of seamen employed from day to day, the many countries in which their deaths are registered, the loose connexion of seamen with their trade, the readiness with which they drop it when tempted by good conditions ashore or are forced out by disabling illness—these and other difficulties are carefully discussed in Appendix B, On the Mortality of Seamen, in the Supplement. (The corresponding section in the 1901 report was signed by Dr. John Tatham; this comment is not signed.) When the numbers employed had been assembled from the returns of the censuses taken in England and Wales, Scotland, Isle of Man, &c., and at sea, the deaths of seamen had to be ferreted out, those of lascars excluded, and finally deaths and populations were arranged by ages, 20–24, 25–34, and up to 65 years, as is done for all occupations. From these figures comparative mortality figures (C.M.F.) are calculated, showing the deaths that would arise among 109,296 persons in the industry, if their ages

[1] Return of Shipping Casualties to and Deaths on Vessels, 1926. H.M. Stationery Office. 1928. 2*s.*

were distributed as they are in the standard population (occupied and retired civilian males), and if the death-rate of each age-group had been as in the industry in question. In the standard population, 109,296 occupied and retired civilians, 1000 deaths happened in the year, and when the C.M.F. for seamen has been calculated we find the following figures (p. 218):—

	Respiratory tuberculosis.	Violence.	All causes.
Occupied and retired civilian males	163·5	73·6	1000
Occupied and retired seamen	221·5	389·7	1768

In the report 178 groups of occupations are discussed, and it is remarked upon that the seamen's C.M.F. from all causes is higher than that of 171 occupations; to which might have been added the fact that the seven higher all have far fewer members. The report proceeds to note that the rate from phthisis is higher than in 131 occupations, "but that for violence is quite beyond the range of land experience. The highest combined suicide and accident C.M.F. in Table C is 236·3, that for conveyors of material to the coal shaft [72,026 persons], which is about 39 per cent. less than that for seamen."

No death-rates for all seamen are given, but they can be calculated from the figures presented, and thus I have obtained the rates in the two last columns of Table II. In one of these columns are given the death-rates of occupied and retired seamen, ages 20–45 for comparison (crude only, the age-distribution being so different) with the service figures, whereas the other gives the death-rates, ages 20–65, for comparison with the death-rates amongst the merchant marine on active service, the seamen occupied from day to day.

We have not yet discovered the true death-rates of seamen in the merchant service; but everyone who reads Appendix B in the Decennial Supplement will realise that seamen, occupied and retired, have an enormous death-rate from violence, and that their death-rate from disease is also extravagantly high. This may be because they are the only large body of British workers whose health is not under medical supervision. The Board of Trade have made no statement indicating realisation of the situation shown by the Registrar-General. The Board may not realise that under their administration seamen have had much higher death-rates than have most other workers who are under the care and supervision of the Ministry of Health. If one thinks of the care the Board of Trade takes of the health of seamen one cannot but recall the bitter words of Alcestis as she thought of the stepmother with whom she saw her children threatened—*ἐχίδνης οὐδὲν ἠπιωτέρα*, which may be reasonably translated "no kinder than a cockatrice."

SMOOTH AND ROUGH STRAINS OF BACTERIA.

IN the days of Koch it was accepted by most bacteriologists that a given species of bacteria was extraordinarily constant in all its characters. When variations were suspected it was found expedient to ignore them in order that a body of knowledge might be built up as to the behaviour of the less variable cultures, whose features were uniform, and whose morphology and physiology was constant. The occurrence of transmutation from one species to another has not been proved, but during the last 20 years variability in certain directions has been gradually accepted and the correlated changes noted and collected.

E. Weil and A. Felix, H. Braun, P. Bruce White, M. Robertson, and others, working with *B. proteus*, *B. paratyphosus*, *B. tetani*, &c., have shown that motile species of bacteria usually contain two distinct kinds of antigenic and agglutinable substances, associated—the one with the flagella, called the H, the other with the body of the bacterium, called the O antigen. Non-motile cultures were also obtained as variants which contained only the O and no H antigen. By these observations they confirmed the earlier work of Smith and Reagh.[1] The H antigen is responsible for agglutination of emulsions by serum in large, loose, flocculent clumps, formed by the entanglement of the flagella; the O antigen especially when present alone, as in the non-motile forms, is revealed by the agglutination of the bodies in small, dense, coherent grains. In normal cultures, of *B. typhosus* for instance, the two substances are present and by varying independently may affect the results of agglutination and other serological tests, since each has its appropriate and independent antibodies. Differences in one or other of these two antigens are responsible for the distinctions between types in the Salmonella group. The H antigen is not demonstrable in emulsions of bacteria which have been heated at 100° C. for one-half to two hours, but the O is thereby unaffected. On the other hand, changes in the O antigen alone are associated with the peculiar serological behaviour of the so-called "rough" variants derived from cultures of certain bacteria; the H antigen remaining unaltered. Indeed this change in the O, sometimes called the somatic antigen, is the main distinction yet recognised between the behaviour of the "rough" and "smooth" strains on which so much work has recently been done. This work dates from 1920, when Arkwright [2] showed that the spontaneously agglutinable variants which could be isolated from old cultures of normal strains of *B. typhosus*, *B. dysenteriæ*, &c., by selecting colonies of peculiar appearance on agar, also had special serological characters indicating considerable deviation from the type in their antigenic content. He called the normal strains, which made turbid growth in broth and from which good permanent emulsions could be made in salt solution, the smooth or S. form, because the round, dome-shaped colonies were shiny on the surface; the colonies of the spontaneously agglutinating (rough) form were irregular in surface and outline. The rough (R.) form could not be made into a permanent emulsion in salt solution, unless the content of salt was reduced to 0·4 per cent. or sometimes even to 0·1 per cent., and broth cultures instead of being turbid became clear with a large, clumped deposit. The R. colonies were not always typically jagged in outline, and shagreened on the surface, but might only appear dull by reflected light, opaque and coarsely granular under the low power. Serum made from the R. form did not agglutinate the S. form, and serum from the S. had only slight action on the R. emulsion. Absorption with R. emulsion removed any R. agglutinins that were present in the S. serum, without affecting the S. agglutinins. A culture might contain pure S. or R. forms only, or a mixture of the two in varied proportions. Very similar observations have since been made on many strains of *B. dysenteriæ*, *B. typhosus*, *B. coli*, Salmonella, and so forth.

The change from the S. to the R. form is usually independent of any alteration in motility. Moreover, as has been noted above, the results of experiments on agglutination and absorption of agglutinins and on the production of agglutinating sera indicate that the change from S. to R. is concerned only with the O or somatic antigen and does not involve any alteration in the H or flagellar antigen.* The smooth somatic appears to be changed into the R. somatic antigen. Schütze [3] and P. B. White [4] also showed that strains which differed widely when smooth often had close affinities in the rough form, since this appeared to have lost the specific S. antigen. The independence of the two changes, from H to O and from S. to R. may be shown by obtaining the following four variants from a single motile strain: (1) normal or smooth

* In the U.S.A. P. Hadley and others have used the terms S. and O. in a rather different sense to that defined above. S. has been taken to mean the complete normal form whether flagellated or not, and the O. form has been represented as intermediate between the S. and the R. In so doing, these writers ignore the existence and importance of the H. or flagellar antigen. Their usage appears to be connected with a scheme of cyclic changes in bacteria along definite lines, which is not at present generally accepted.

motile, containing H and S somatic antigens; (2) rough motile, containing H and R. somatic antigens; (3) smooth, non-motile, with only S. somatic antigen; and (4) rough non-motile, with only R. somatic antigen. The permanence of these variants is still a matter of uncertainty. They may all four remain unchanged through many subcultures, but the tendency to revert or change further varies with the strain. Broth cultures of S. tend to change to R. if not subcultured for many days. R. cultures, if free from S. elements, are said to be incapable of reversion, but this is very doubtful.

Changes in Virulence and Pathogenicity.

The significance of these variations has not yet been established, though various isolated observations have shown that they may be connected with changes in virulence and pathogenicity at least in some organisms. It has been found by Topley,[5] Goyle,[6] P. B. White, and others, that in Salmonella and *B. typhosus* the R. form is much less pathogenic than the S. In the case of *B. dysenteriæ* this has not been shown, since both S. and R. forms make strong toxin. There is also experimental evidence that vaccines made with the R. form of *B. paratyphosus* A and *B. typhosus* are much less protective than those made with the S. form. When variants of other classes of bacteria have been examined, somewhat similar facts have been elicited. F. Griffith[7] found that by selecting colonies of pneumococcus with a dull surface he could obtain a variant which he called rough and found to be of very low virulence for mice. This form was not spontaneously agglutinable in salt solution.

In America O. T. Avery, M. Heidelberger, H. Reimann, and L. A. Julianelle have determined that there is a change or degeneration of the antigen of pneumococcus in certain variants which have lost their capsule. This "degraded" form they consider identical with the R. form of Griffith. It has lost its type specificity and is non-virulent, but has agglutinins in common with the R. form of other pneumococci.

They have traced this change to the loss of a definite carbohydrate substance associated with the capsule. Julianelle also found precisely similar R. forms of the capsulated *B. pneumoniæ*. It seems probable that a somewhat similar loss occurs in the change from the S. to the R. form of *B. dysenteriæ*, *B. typhosus*, &c., but the chemical work on this latter group has hardly reached so complete a stage. In the case of the Gram-negative intestinal group and of the pneumococcus, and pneumobacillus, the R. form can be produced by growing the S. form in immune serum. M. Cowan found that certain variants of *Streptococcus hæmolyticus* derived from colonies with uneven surface and outline were less virulent than those from smooth-domed colonies, and that the uneven colonies led to growth in broth with a large deposit and a clear supernatant. She therefore called these variants rough on the analogy of *B. dysenteriæ*. Later observations have shown that irregular streptococcus colonies forming clear broth cultures with large deposit may be more virulent than the smooth-looking colonies which form turbid broth colonies (Todd,[8] Andrewes,[9] 1927–28), and that virulent and non-virulent variants of the same culture may have almost indistinguishable colonies. In fact, the results of work on so-called S. and R. variants of streptococci are at present inconsistent and require further work for their elucidation.

It is desirable even at this stage to give the term "rough" uniform significance, and as far as possible to restrict its use to variants with one set of characteristics. The change in the somatic antigen should be regarded as the most essential change in passing from S. to R. This is almost always associated in the Gram-negative intestinal group of bacteria with spontaneous agglutinability in salt solution, but not in distilled water. The appearance of the colonies is usually a valuable guide to the detection of R. variants, but this is not always the case and R. colonies of the same strain may differ in appearance. It is not clear yet how far the variants described above are merely shifting states within the normal limits of the species. The wide affinities of the R. form suggest an approximation to a primitive state from which more definite types have developed. The suggestion that loss of virulence may occur in the body of an infected animal in connexion with change from S. to R. has not yet been established, but this and other questions are receiving attention from the large number of workers now investigating the anomalies of rough and smooth variants.

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THE DAIRY CONGRESS.

THE first three sessions of the Eighth World's Dairy Congress were held at the Central Hall, Westminster, from June 27th to 29th. The Congress has attracted some 2000 delegates representing 42 countries, and the interest shown suggests that the civilised nations of the world are realising that, as Sir George Newman put it, the dairying industry is not only a trade but a service for health. Prof. E. V. McCollum pointed out, moreover, that in countries where dairy animals are abundant the physical development of the population reaches a high standard.

The proceedings on the first day were opened by Mr. Walter Guinness, Minister of Agriculture, who referred to the changes which had been brought about in the last hundred years by urbanisation and the growth of the transport problem. It was possible, he said, that we were now reaching the limits of the distribution of raw milk. The dairy industry in England and Wales was the most important branch of agriculture and the value of its products was about £58,000,000 a year. Dairy herds were increasing and had reached the record figure of 2,800,000. The consumption of milk in England was, however, much too small. Even greater developments with an increased demand would result from public confidence in an improved supply. Mr. J. Maenhaut, President of the National Dairy Society of Belgium, brought greetings from his country, and Dr. F. E. Posthuma, formerly Minister of Agriculture in the Netherlands, described how dairying in Holland had changed from a family industry to a factory business. He held that the owner of the farm should also be part owner of the factory. It was probable that there would be many more milk products in the future. It was necessary to organise both farms and factories on an international as well as a national basis.

The business of the Congress was taken in sections. In the following notes are summarised a few of the numerous communications which had a bearing on public health.

Feeding of Milch Cows.

Mr. R. B. Boutflour (Harper-Adams Agricultural College) drew attention to the fact that an average cow can only efficiently digest 30 lb. of dry food. If it is given 40 lb. its digestive organs are likely to suffer and a diminished supply of milk will result. He emphasised the need to control both the total amount of food and the amount of indigestible fibre and the importance of careful preparation of the cow for her lactation. An adequate supply of water and three milkings in the day produced high yields; many herds now giving an average of 700 gallons per annum could have their output raised by 50 per cent. if attention were paid to these matters. Mr. James Mackintosh (Reading) drew attention to the very

varying soils of the districts in which dairying was now carried on, and to the need for adapting the feeds to the crops which could be best grown in the district. Analyses of the district crops was desirable. The use of roots for feeding was chiefly a question of cost. Dr. H. E. Magee (Rowett Institute, Aberdeen) drew attention to the drain on the calcium reserves of the cow caused by heavy milking, and pointed out that if this was not counteracted in the feed and an adequate supply of vitamin D secured at least a reduction of milk, abortion, or tuberculosis might result. An American speaker drew attention to the deficiency of phosphorus in the soil of Minnesota, where adjustments had had to be made for the excess of sulphate of magnesia in the water.

Milk Recording.

Many communications testified to the good work done by milk-recording societies, and it was urged that more could be done through such societies to secure the elimination of dust in the cowsheds and the prevention of tuberculosis. In New Zealand, where the cow and human population are the same—namely, 1,400,000—it was claimed that recording had brought about an increase of 30 to 40 lb. per cow in butter-fat. The milk there is sold according to fat-content. Scotland was mentioned as a pioneer in recording, and there also the creameries pay for milk in proportion to the fat-content. It was pointed out that it is worth while to do the recording twice a day, so that steps can be at once taken to counteract a drop in yield or the beginning of illness. It was also stated that many farmers employed inefficient milkers. One member of the Congress went so far as to suggest the promotion of sweepstakes among the milkers to promote a spirit of competition. Another suggestion put forward was the trial of a longer interval between calvings—e.g., 15 or 18 months. The need for a standardisation of milk records was put forward by Prof. Prawochenski (Poland) and other speakers.

Grading of Butter and Cheese.

From Australia, New Zealand, and Canada came the information that the grading of butter and also of cheese had by instigating competition amongst the manufacturers produced a great improvement in quality. There was some discussion as to the want of agreement in the grading of the same butter before it left Australia and after it reached London, and it was also pointed out that the system of grading might be helped if steps could be taken to enable the consumer to know what grade he was purchasing.

Milk Control and Designated Milk.

Many papers dealt with the question of control of the milk-supply, and there was general agreement that the best control was by the banding together of producers who believed in sound work and realised that success lay in securing the maximum number of satisfied customers. There appeared to be complete unanimity that the cost of control and inspection by the central and local governing bodies was for the good of the whole nation and should be borne by the taxpayer rather than by the ratepayer. Much was said with regard to designated milks in this country. Among the points made were the need for a much greater incentive for the production of Certified Milk and for a change of nomenclature. The titles of the designated milks were admitted to be most misleading, and "Grade A" was frequently thought by the public to be the best class of milk. Mr. Wilfrid Buckley drew attention to the fact that even a recent British Red Cross publication had fallen into this error. Sir George Newman agreed that the present nomenclature was unsatisfactory and asked the Congress to supply a unanimous suggestion for its amendment. He also pointed out, when the usual controversy between advocates of clean milk and pasteurised milk respectively arose, that pasteurisation and the production of clean milk were not really antagonistic aims. Pasteurisation might make dirty milk safe, but it could not make dirty milk clean. Several speakers pointed out that milk in the U.S.A. was graded before it was pasteurised, and others urged that in this country all milk except that from tubercle-free cows should be pasteurised.

Various Milk Products.

As compared with previous national milk conferences, there was evidence of a broader view as to the uses of milk. Captain J. Golding (Reading) said that the Dairy Institute was not sufficiently alert to prevent the waste of milk by-products, such as whey and skimmed milk. The addition of skimmed milk greatly improved bread. Mr. H. E. van Norman (Chicago) said that American bakers were successfully mixing dried skimmed milk with flour for baking in the proportion of 3 per cent. to 8 per cent. Skimmed milk was also being used for the manufacture of biscuits and ice-cream. Mr. F. Rasmussen, Secretary of the International Association of Ice Cream Manufacturers, showed that ice-cream was now an important food in the U.S.A. Nearly as much milk was used to make ice-cream as to make cheese, and the consumption had gone up from one gallon per head per annum in 1905 to about three gallons in 1926. Nearly £100,000,000 was invested in its manufacture. About two-thirds was consumed in the four summer months and absorbed the summer surplus of milk, thus helping to stabilise prices. The ingredients were milk products, plus sugar and flavouring agents, and the average ice-cream contained 22 per cent. of milk solids. The manufacturing associations hoped further to increase the sale by supplying housewives with ice boxes. Prof. A. Mertens (Louvain) said that Belgium was following the lead of America in the matter of ice-cream. Interest in the ice-cream question gave rise to a special session.

The Rôle of the Veterinary Surgeon in the Improvement of the Milk-supply.

Two sessions were devoted to this question. The discussion brought out a strong feeling that biological tests and routine veterinary inspection should be compulsory and universal, and that the veterinary inspection should not be limited in its purpose to the control of tuberculosis, but should be utilised for improving the feeding and hygiene of the cattle. Dr. W. G. Savage estimated that the cost of inspection would be approximately from 1*s.* 6*d.* to 1*s.* 8*d.* per cow per year, which meant from a quarter to one-third of a million per annum for England and Wales and from £10,000 to £14,000 for his own county of Somerset. This cost was a heavy burden on poor agricultural counties, mainly for the benefit of urban areas. Prof. Porcher said that veterinary inspection was not compulsory in France, but had been made optional for the departments. An able paper by a veterinary surgeon, Mr. Trevor F. Spencer (Kettering), expressed the view that the present legislation as administered was doing nothing to reduce the prevalence of bovine tuberculosis and that a much more determined effort was needed. There was very little regular veterinary inspection. His views (as to the futility of the present administration of the law) were largely in accord with those expressed in THE LANCET last year by Dr. Savage. With a proper effort the expense of dealing with tuberculosis should be a decreasing one year by year. Under present conditions the expense would be a continuous one. Mr. Spencer's paper caused considerable discussion as to whether the local knowledge of the part-time veterinary surgeon outweighed the disadvantage caused by the conflicting interests of his private clients, and also brought out the fact that, while veterinary inspection was not appreciably used in England and Wales, it was in full operation in most of the dairying counties of Scotland. Several speakers blamed the Ministry of Health for failure to encourage the application of veterinary inspection in England and Wales. Most of them were inclined to think that the first step with regard to tuberculosis was the general enforcement of present legislation with an encouragement of designated milks and a gradually increasing stringency of the enactments and that the

time was hardly ripe for new legislation or the extended use of the tuberculin test. Mr. Hugh Begg (county veterinary inspector, Lanark) pointed out that 75 per cent. of the tuberculous cows were aged and that more attention might be given to killing off aged cows. Mr. A. Gofton (veterinary inspector, Edinburgh) referred to the insufficient liaison between the departments of agriculture and health, and pointed out that most of the burghs of Scotland had had veterinary inspectors for 25 years. Captain R. Simpson (veterinary inspector, Cumberland) was as optimistic as the Scottish speakers as to the good effects of present legislation in his county. Prof. Ostertag took part in the discussion. A breeder of pedigree stock, timorous as to the use of tuberculin, was promptly answered by another pedigree breeder (Hon. G. Corbett, Ayrshire), who pointed out that it was essential for anyone who produced for export to have tubercle-free herds. He added that they hoped soon to have special accommodation and special prizes at the Highland show for tubercle-free animals. He referred to the danger of infection from manure and mentioned two precautions which he had adopted —namely, double fencing of the fields used by the tubercle-free cattle, and, in the event of reactors being found at the half-yearly testing, the segregation of the two neighbours of the reactor, until it was certain that they were not infected.

Food Value of Milk and Propaganda.

There were many papers on the food value of milk. Prof. McCollum referred to large scale experiments on the gain to American school-children from an extra allowance of milk, and Prof. Pirquet (Vienna), after referring to the similar experience of Dr. Corry Mann and Dr. G. A. Auden in England, mentioned that the use of milk was increasing in Austria. There were many papers on methods of propaganda, and Dr. Ernest Eber (Hungary) moved a resolution for the establishment of a central office in London for the organisation of dairy propaganda throughout the world. This resolution was referred to the Executive Committee. The question of the education of those engaged in the dairying industry produced communications from Dr. Stenhouse Williams, Dr. Otto Gratz, of Hungary, and Dr. F. Zaribnicky, of Vienna.

The Congress also held sessions in Reading and Edinburgh; many tours of professional interest to its members are being made, and the Congress will not conclude until after the meeting of the Royal Agricultural Show at Nottingham, July 10th to 12th.

Conclusion.

The arrangements for the sessions and tours brought credit to the organising ability of the secretary, Mr. Arthur D. Allen, and the tone of the discussions justified the contention of Mr. Walter Guinness at the outset, that although the delegates to the Congress were competitors and in the markets of the world, they were coöperators in education and research.

LEAGUE OF NATIONS.

AN INQUIRY INTO THE RADIOTHERAPY OF CANCER.

THE Subcommission of Experts charged by the Cancer Commission of the League of Nations with the study of Radiotherapy of Cancer held its first preliminary meetings on June 18th and 19th. These were attended by the President of the Cancer Commission, Sir George Buchanan, senior medical officer at the British Ministry of Health.

This subcommission included the following experts in radiology and gynæcology:—

Prof. Cl. Regaud, Director of the Radium Institute of the Curie Foundation, Paris (President).

Dr. C. Comyns Berkeley, Director of the Middlesex Cancer Charity Hospital, Gynæcological Service.

Prof. Döderleim, Director of the Gynæcological Clinic of the University, Munich.

Prof. W. Lahm, Director of the Laboratory Research Work, the State Gynæcological Clinic, Chemnitz.

Prof. van Rooy, Director of the Gynæcological Clinic of the University, Amsterdam.

M. R. Ferroux, Chief of the Therapeutical Works at the Curie Foundation, Paris.

Prof. Voltz, Gynæcological Clinic of the University, Munich.

Investigator: Dr. Janet E. Lane-Claypon, attached to the Departmental Cancer Committee of the Ministry of Health, London.

Prof. G. Forssell and Dr. Heyman, of Radiumhemmet, Stockholm; and Prof. Pestalozza, Director of the Gynæcological Clinic, Rome, were absent.

The subcommission was appointed in consequence of a report by the Cancer Commission to the Health Committee of the League in May last, in which emphasis was laid on the importance of collecting data from different sources regarding the methods of radiological treatment and their modern results. In addition, it was suggested by the President of the Cancer Commission that it might be well for the subcommission to take cognisance of the following points: 1. Available supplies of radium. 2. The centralisation of radium in each country for the supply of the smaller clinics and individual practitioners, in the event of this being considered desirable. 3. The form of record which should be kept with the view of comparing the results obtained in different countries after some five years' observation after cessation of treatment.

The subcommission first considered in detail the nature of the information to be collected and the sources to which application should be made. It was considered necessary to obtain individual details of a, numerically, large series of cases of cancer of the uterus divided according to their treatment (*a*) by radium, (*b*) by X rays, or (*c*) by both—taking account only of those cases in which the treatment was completed more than three years ago, and in which the after-histories were traceable; it will also be necessary to have statistical data of all observed cases in each of the clinics taking part in the inquiry. The details to be given were settled, but the subcommission left the preparation of model forms, cards, &c., to the Health Secretariat, which for this purpose will have the advice of Dr. Lacassagne (Paris), Prof. Voltz (Munich), Dr. Heyman (Stockholm), in addition to that of Dr. J. E. Lane-Claypon, who has been appointed the technical inquiry officer of the Commission for this purpose. The same group of experts will assist in the collection and codification of the replies received.

The clinics and institutions to be applied to are to be limited in the first instance to those which possess a sufficiently large experience, and their assistance may be invited either directly or through national health administrations or other appropriate national organisations. As some cancer or gynæcological clinics have already expressed their willingness to coöperate in an inquiry whose practical value they recognise, it is hoped that those data can be collected without delay. It is intended that the results when analysed should be submitted in the form of a report to the Committee, and published in due course. While the clinics or institutions chosen will be specially requested to follow the system of record proposed to them for purposes of international comparison, they will also be invited to summarise their own observations and views regarding the efficiency of radiological treatment in any manner which they consider may be useful to the Commission. The inquiry as such is to be limited to uterine cancer (cervix and body), but accessory information regarding cancer of other gynæcological sites may be supplied for separate study.

On the broader questions relating to the treatment of uterine cancer by radiology, the President submitted a series of considerations which, after a general discussion, were adopted by the subcommission as representing the most important directions to which its future discussions should be directed, and on which definite recommendations should be

made in due course to the Health Committee with a view to publication. Among these considerations were: 1. Propaganda among doctors and the general public in order to ensure the early discovery and early and correct treatment of cancer of the uterus. 2. Increase in the number of consultation centres. 3. Organisation of centres for microscopic analysis in order to ensure early diagnoses. 4. Recommendations for the organisation of the correct treatment of the disease. 5. Recommendations for the radio-therapeutical equipment of clinics. 6. Disadvantages of out-patient treatment. 7. Recommendations for the compilation of reliable statistics. 8. Recommendations for special scientific research.

The Commission also noted, as subject for inquiry, the available supplies of radium and the need for an authoritative opinion as to the advantages and drawbacks of distributing radium or radium emanations to hospitals and individual practitioners.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the 1927 statistics of six districts:—

Name of district and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality from childbirth.
Wiltshire C.C... (299,500)	15·4	12·1	0·75	1·41	2·4	2·0	51	2·3	3·5
Sunderland C.B. (162,700)	22·4	13·8	1·38	1·10	3·2	1·8	94/41	14·2	4·7
Edmonton U.D. (71,279)	17·8	10·9	1·23	1·0	2·4	2·1	61	7·1	0·8
Doncaster R.D. (41,760)	24·1	9·8	0·76	0·74	2·2	0·8	76	7·9	3·9
Ramsgate B. .. (30,100)	15·0	15·0	1·10	2·0	2·9	1·7	69/33	4·0	0·0
Yeovil B... .. (16,500)	14·7	10·9	0·54	1·09	1·9	2·2	49/37	0·0	8·2

Wiltshire.

Dr. Claude Tangye says there are still two obvious gaps in the county administration. The first is that children, apart from special cases, do not between the age of 1 year and school age receive the supervision which is urged by the Ministry. Provision has been made in the current estimates for an increase in the health visiting staff for this purpose. The second gap is in the tuberculosis scheme. Hospital facilities both for pulmonary and non-pulmonary tuberculosis are satisfactory but, owing to the inadequacy of the county medical staff, the supervision of cases in their own homes is only partially carried out in the Swindon area, which perhaps needs it most, being densely populated and industrial in character.

The deaths attributed to influenza numbered 313 and exceeded those from bronchitis (225) and pneumonia (188). The epidemic of influenza in the early part of the year accounted to a large extent for the higher death-rate as compared with the previous year, and also caused the closure of 159 schools. With modern ambulance facilities the present number of small isolation hospitals in the county could be reduced. The county council takes the responsibility of dealing with all cases of small-pox which may occur within the county, and the new hospital for the northern district at Ogbourne St. George is now complete.

The water-supply of the towns is good, but many of the villages are dependent upon wells which have become hopelessly polluted and others are dependent upon rain water only. The local authorities are awakening in the matter, and during the year inquiries were held with regard to the water-supply of three of the rural districts. In addition, the water-supply for the parish of Ashton Keynes, chiefly derived from numerous polluted shallow wells, is thought to be associated with the prevalence of intestinal worms among the children, an opinion which is said to have been confirmed by an inspector of the Ministry. As a result the rural district council is considering a scheme for the water-supply of this village. Pure water for these villages and for the farms is doubly important. In the first place, Dr. Tangye says ordinary typhoid fever is making its reappearance. There were 12 notifications during the year with three deaths. In the second place, compliance with the new Milk and Dairies Order is impossible without a pure water-supply, and there is, of course, a great milk industry in the county. The sewage disposal works have also received considerable attention. Of the effluents from 13 urban districts, 12 were classed by the analyst as fair or good, and one as poor. Of the effluents from 15 rural district works, nine were classed as fair to good, while two are described as not good, two as bad, one as very bad, and one as very foul. The Staverton Milk Factory pollutes the Avon in the Melksham district and a very foul effluent is from the Netheravon works, which are under the War Department.

Council houses have been erected in every district except Malmesbury U.D. and Chippenham R.D., and the Chippenham R.D. Council have now decided to build. The Housing (Rural Workers) Act came into force on Dec. 15th, 1926, and up to the end of 1927 20 applications were received. In eight cases grants were approved totalling £1455, and a loan of £100 was made, but two of these applications were withdrawn. Of the remaining 12, ten were refused, one is under consideration, and a grant of £100 was made in 1928 for the other. This Act, says Dr. Tangye, provides the first real opportunity open to county councils for direct help in the improvement of housing conditions, and few counties have wider scope for its operation than Wiltshire.

The follow-up of tuberculous milk samples reported by outside authorities is doing something to eliminate tuberculous cows from the Wiltshire herds. Thus, 22 complaints received resulted in the inspection of 32 farms and the discovery of 19 tuberculous cows. Reports from the London County Council of the premature death of many of the inoculated guinea-pigs led to an investigation of the conditions at other farms with the discovery of dirty conditions of the udder and abscesses, and incidentally of one more tuberculous cow. No satisfactory explanation, however, was found to account for the deaths of the guinea-pigs. The county council is also taking samples of milk for bacteriological examination, and following up bad results by veterinary inspection of the farms. In this way four more tuberculous cows were weeded out.

The county council is offering the assistance of its medical and nursing staff to local authorities, who are prepared to undertake the immunisation of children against diphtheria. Seven cases of encephalitis lethargica, six of which proved fatal, were notified, as compared with 20 in 1926. The county council have decided to pay the cost of a locum tenens for one month to enable a midwife, on the application of a local nursing association, to attend a post certificate course; and they have also arranged to supply pelvimeters at a special rate to the midwives for antenatal work. The midwives sent for medical aid in 26 per cent. of their cases. The doctors' fees paid by the county council amounted to £669, of which £244 were recovered from the patients, the balance being divided between the county rate and the Government grant.

The health visitors inspect boarded-out children for all the boards of guardians in the county except three. Dr. Tangye regrets that this scheme has not been accepted universally, seeing that boards of guardians do not employ, as a rule, an experienced nursing staff for this work.

Sunderland.

Dr. A. S. Hebblethwaite presents his first annual report, having been in charge during the last seven months of the year. The unprecedented rainfall during the summer caused flooding in many of the low-lying areas and drew attention to the inadequacy of the sewer accommodation. Housing conditions in the older and more congested parts of the borough have been improved by the number of new municipal and private enterprise houses built, but the problem of housing the working classes in less crowded houses near their work remains. The work in the light treatment clinic has been increased and arrangements have been made for treating children under the age of 5 years.

Dr. Hebblethwaite especially draws attention to the heavy death-rate from respiratory diseases. Tables are given, which show that since 1918 the pneumonia death-rate in Sunderland has been more than 50 per cent. higher than the English rate and that the bronchitis death-rate in Sunderland has been double the English rate. Of the 249 deaths from pneumonia, 140 were children under the age of 5. Dr. Hebblethwaite hopes that more children suffering from pneumonia will be accommodated in the municipal hospital in future.

Sunderland is now, practically speaking, a water-carriage town, and it is hoped that before long a standard dustbin will be provided for every house under the local Act of 1927. There are now only eight cowkeepers within the borough, keeping approximately 120 cows which are inspected quarterly by the veterinary surgeon.

There were 47 cases of small-pox notified with one death at the age-period 45–65. An outbreak at a common lodging-house with 90 male inmates caused considerable trouble owing to the refusal of vaccination by the contacts. The first case was removed on Sept. 13th, the second on Sept. 17th, the third on Sept. 30th, the fourth on Oct. 8th, the fifth on Oct. 9th, and the sixth and seventh on Oct. 10th. After each removal thorough disinfection was carried out and the lodging-house was closed to new applicants from Sept. 13th. After the last removal most of the contacts who needed vaccination accepted it. Eight cases were notified from the Highfield Poor-law Hospital, and the remaining cases occurred in various parts of the borough. There were 11 notifications of encephalitis lethargica, and ten deaths from this disease, five of which were of cases notified in the previous year. Of the 11 cases notified in 1927, five cases died in 1927, one in 1928, four are still suffering from some disablement, and one has recovered.

Edmonton U.D.

Dr. H. W. Harding describes his district as one of the dormitories of London, from which many of the inhabitants travel to town daily. The greater portion of Edmonton is in the valley of the Lee and only slightly higher than its waters, and Dr. Harding suggests that such a site may be responsible for throat affection, enlarged tonsils, and endemic diphtheria. Housing conditions are far from satisfactory. There is still overcrowding and there are various blocks of houses which should be dealt with as soon as circumstances permit. The day nursery registered 7000 attendances. The cost was about £960, of which about £220 was paid by the mothers in fees. The nursery also takes, as residents, the children of mothers who have been taken from home owing to illness; and the full number of 180 school-girls attended the mothercraft classes during the year. The Education Committee contributes £50 to the funds of the nursery in return for the holding of these classes. The joint orthopædic clinic, which provides treatment for crippling defects in children under 5 years and of school age, is conducted by Mr. J. B. Barnett, of the Royal National Orthopædic Hospital, and operative treatment, when necessary, is carried out at Stanmore Hospital. By arrangement with the guardians the maternity wards of the North Middlesex Hospital are used for municipal patients. The fee charged to the council is 6*s.* per day and the order for admission is signed by Dr. Gertrude Outram, who is in charge of the antenatal clinic. The same hospital has also provided, since early in 1927, artificial sunlight treatment for cases of rickets and marasmus.

Doncaster R.D.

Dr. A. B. Dunne says the needs of the district have long since outgrown the existing accommodation of the Doncaster Royal Infirmary and a contract has been signed to build the first block of the new infirmary on a spacious site on the Thorne-road, Doncaster. Dr. Dunne refers to a difficulty caused by speculators buying land and builders erecting a large number of small houses with the assistance of the Government subsidy. These houses have been passed by the council with the drainage emptying into cesspools and the duty of cleansing the cesspools falls on the owner or occupier. The council are now taking steps to meet the difficulty by instituting sewage disposal works for the respective parishes, but the council's schemes must necessarily come later than the building schemes. Dr. Dunne also refers to the increase of atmospheric impurities owing to the growing number of colliery stacks and miners' houses. He suggests that the miner's house produces an exceptional amount of domestic smoke owing to the "home coal" allowance of 1 ton per month to each coal-miner. He looks to the chemists to provide a cheap and smokeless household fuel as a remedy. Dr. Dunne also wonders, in view of universal baths, for how many years the red sandstone can be tapped without encroaching on its capacity, and states that the level of the water in several of the deep boreholes has been lowered. There were 118 notifications of small-pox with one death. The one death was that of a woman of 61, who had been vaccinated in infancy and contributory causes of her death were phlebitis and "petit mal."

Ramsgate.

Dr. W. J. Bannister reports a rainfall of 30·1 inches and a sunshine record of 1647·1 hours. He enumerates the advantages of Ramsgate as a health resort and mentions that a certain number of parents take up their residence in Ramsgate with the object of restoring their delicate children to robust health. From the high infant mortality-rate and the school report one gathers that insufficient attention is given to the children of the normal population. There are nine public elementary schools, of which only the two provided by the education authority and one of the "non-provided" are satisfactory, while in the case of the other six faulty design and unsuitable situation leave much to be desired. This state of affairs, no doubt, makes Dr. Bannister's plea for an open-air school and open-air classes all the year round the more urgent. Verminous conditions give trouble in the schools. There are no school baths and there is no organiser of physical training. Dr. Bannister also pleads for the formation of classes with a view to corrective exercises for postural defects. Each of the four health visitors carries out all the health visiting and school work in the area allotted to her. At the end of the year 198 of the 352 houses in the council's scheme had been provided and contracts had been made for the erection of 38 parlour and 104 non-parlour houses, of which the latter will help to remove the pressing need for housing accommodation at low rentals. During the year an improvement scheme for an unhealthy area was approved by the Ministry.

Yeovil.

Dr. C. W. Gee reports that the staple industry is the manufacture of leather gloves, including all

processes from the preparation of the raw hides. The water-supply is not sufficient during dry periods for the area supplied, and the council have obtained powers to sink a new well in the greensand at Cattistock, from which an additional daily supply of 500,000 gallons is expected. Very few houses in the borough are provided with sanitary dustbins and a great nuisance is caused by the blowing about of refuse on windy days.

There were 243 births and 52 expectant mothers attended the antenatal clinic. The general standard of housing is fairly good, but there are many worn-out houses which cannot be made reasonably fit for habitation and which would be condemned under normal conditions. Of 191 new houses erected, 168 formed part of a municipal scheme.

SCHOOL MEDICAL SERVICE.

Name of district.	No. on roll.	Average elementary school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.†
Shrewsbury	3,900	—*	1,575	6,586	10·3
Bootle ..	12,010	10,804	3,751	12,705	22·5
Taunton ..	2,827	2,616	793	2,404	18·4

* Not given. † Excluding dental defects and uncleanliness.

Shrewsbury.

By the reorganisation of his present nursing staff and the addition of another nurse Dr. A. D. Symons proposes to conduct an increasingly intensive campaign against personal uncleanliness, which perhaps more than any other single condition indicates parental ignorance or neglect.

This reorganisation will coördinate the maternity and child welfare work with the school service by enabling each nurse to carry out all the nursing duties of both services in her own district. In summarising the results of his work for the year Dr. Symons has taken the opportunity of pointing the way to achieve further improvements in the health of the children of Shrewsbury. His proposals include better ventilation and lighting in the schools and bigger playgrounds with shelters for open-air classes, and he has published a special memorandum on "The School Building in Relation to Health," in which his ideas are clearly set out. The provision of milk and cod-liver oil for necessitous children has been justified by their increase in height and weight. The need for further dental assistance will be met by additional dental sessions. Close coöperation exists between the S.M.O. and the organisers of physical training not only in the arrangement of games and sports, but in the supervision of remedial exercises where these are necessary. Acknowledgment is made of the cordial help of teachers, attendance officers, and voluntary associations. That Dr. Symons's good work is appreciated by the parents is shown by the increasing numbers who attend medical examinations and clinics.

Bootle.

Dr. F. T. H. Wood, S.M.O. and M.O.H., in his introduction to this report, points out that the functions of the local education authority go beyond the promotion of the mental development of the child and are actively concerned with his health and physical development. Medical inspection is conducted for the most part by Dr. Purser Davies, who also deals with maternity and child welfare. The tuberculosis officer, Dr. R. Hannah, also helps in medical inspections and at a minor ailment centre. Dr. Wood himself occasionally conducts routine examinations and undertakes the medical work in connexion with the special classes and the Mental Defective Act cases. Meals are provided by the school canteen committee, of which the S.M.O. is a member; this committee has control of a useful fund for providing needy children with clogs during the winter months.

The remedial exercises clinic is supervised by the S.M.O. with the coöperation of an orthopædic surgeon; this clinic deals with mouth-breathers and cases of minor spinal curvature, as well as more definite pathological conditions. The special interest taken by the local authorities in physical development is shown in a further grant of £200 for expenditure on apparatus, and the appointment of a special (playing fields) subcommittee to find suitable playing accommodation. A striking improvement in personal cleanliness and in the attendances at the minor ailment centre is recorded this year, also a reduction in the percentage of most of the physical defects. The hygiene of the mouth and teeth is the subject of a booklet which has been prepared by the Dental Board and circulated among head teachers with excellent results in this town. Teachers have been zealous in passing on information to the children, with the result that further dental assistance will soon be called for. It has not yet been possible to establish any special schools, but the children in the special classes for the dull and backward have been under the supervision of the S.M.O. and all have been individually examined.

Taunton.

In a small town facilities such as clinics and special schools are difficult to establish, but a compensating advantage is that since nearly all the health work is directly under one person coördination is excellent, and intimate contact with parents can be secured. In Taunton Dr. J. Allen, who is in charge of public health, school inspection, and infant welfare clinics, gets a high percentage of parents (72 per cent.) to attend the medical inspections. Moreover, the fact that one person serves both as school nurse and attendance officer leads to the early discovery of infectious and other diseases. The dentist, Mr. A. J. Percy, states that both parents and children are becoming more favourably disposed toward the idea of having teeth filled rather than removed. This preference is a feature of the practice at Taunton, for with permanent teeth the fillings (594) are over eight times as many as the extractions (72). The dentist anticipates that every year 50 per cent. to 60 per cent. of the children will need treatment; but in view of the thorough and prompt work now being done some reduction may, we hope, be looked for.

Taunton is spared some of the disadvantages of a small town, since it is the headquarters of several institutions belonging to the county of Somerset—for example, the orthopædic clinic of the county council is open to the children and the infants of the borough, as is also the tuberculosis dispensary. The occupation centre of the Somerset Association for Mental Welfare is available for low-grade mentally defective children. Dr. Allen mentions that this valuable institution is in urgent need of more local support.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 23RD, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 230 (last week, 282); scarlet fever, 1716; diphtheria, 969; enteric fever, 54; pneumonia, 769; puerperal fever, 47; puerperal pyrexia, 100; cerebro-spinal fever, 10; acute poliomyelitis, 9; acute polio-encephalitis, 2; encephalitis lethargica, 31; dysentery, 8; ophthalmia neonatorum, 117. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 21 counties: London, 11 (Bermondsey 1, Hackney 1, Southwark 1, Wandsworth 8); Bedford, 6 (Bedford 2, Luton 4); Derby, 28; Devon, 1; Durham, 62; Gloucester, 2; Hertford, 1 (Bishop's Stortford); Lancaster, 11; Middlesex, 1 (Wembley); Norfolk, 1; Northampton, 4; Northumberland, 14; Nottingham, 6; Soke of Peter-

borough, 1 ; Stafford, 16 ; Surrey, 1 (Godstone) ; Warwick, 2 (Coventry) ; Worcester, 1 ; Yorks, North Riding, 4 ; West Riding, 28 (last week 56) ; Glamorgan, 7 ; Monmouth, 22.

The numbers of cases of small-pox in London have declined during the last three weeks, the figures being 49, 24, and this week 11.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on June 26th-27th was as follows : Small-pox, 69 under treatment, 7 under observation ; scarlet fever, 1781 ; diphtheria, 1979 ; enteric fever, 18 ; measles, 600 ; whooping-cough, 152 ; puerperal fever, 21 (plus 19 babies) ; encephalitis lethargica, 68 ; poliomyelitis, 1 ; "other diseases," 24. At St. Margaret's Hospital there were 14 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were 6 (0) deaths from enteric fever, 34 (8) from measles, 5 (4) from scarlet fever, 48 (7) from whooping-cough ; 29 (8) from diphtheria, 36 (12) from diarrhœa and enteritis under two years, and 31 (3) from influenza. The figures in parentheses are those for London itself.

The six fatal cases of enteric fever occurred at Hornsey, Bath, Ashton-under-Lyne, Huddersfield, Halifax, and Newcastle-on-Tyne.

The number of stillbirths registered during the week was 258 in the great towns, including 38 in London.

Correspondence.

"Audi alteram partem."

THE EARLY DIAGNOSIS OF CANCER OF THE COLON AND RECTUM.

To the Editor of THE LANCET.

SIR,—Dr. A. F. Hurst, in the admirable paper published in your issue of June 23rd, puts forward a plea for a definite diagnosis of malignant disease of the colon with view to early, and therefore probably more successful, operation. But even when the patient first complains of suspicious symptoms it may be already too late, and all physicians must have met with cases in which the disease had certainly been in existence for a long time without very marked symptoms. A striking case in point recently occurred at the Italian Hospital. A woman, aged 49, was admitted under my care on June 23rd. She was well nourished and had "enjoyed good health" all her life. She had no abdominal symptoms whatever until a week before admission, when she began to suffer from flatulence and constipation, which became complete two days before admission. The abdomen was somewhat distended, but not tender or rigid ; there was no fever, no pain, no vomiting, the pulse and general condition were good. Per rectum nothing could be felt. Castor oil and high enemata failed to produce any evacuation and, since the patient vomited once, and colicky pains appeared, laparotomy was performed by Dr. Lwow, the resident medical officer. On opening the abdomen, gas escaped and free purulent fluid was found. A mass of malignant disease completely constricted the upper part of the sigmoid and a mass of glands in the pelvic mesocolon. The bowel was ruptured above the seat of the disease ! A provisional diagnosis of sclerosing cancer in some part of the intestines, with impaction of fæces above, had been suggested before the operation, but no one who saw the case was prepared for the gross and catastrophic lesions which must have existed for a long time previous to her admission without causing any symptoms to arouse the least suspicion.

I am, Sir, yours faithfully,

T. VINCENT DICKINSON.

Sloane-square, S.W., July 2nd, 1928.

A SIMPLE HOOKWORM LARVICIDE.

To the Editor of THE LANCET.

SIR,—The letter of Col. Clayton Lane in your issue of May 19th on the effect of common salt in destroying hookworm larvæ recalls an investigation carried out by me some seven years ago in an Indian salt mine.

As part of an inquiry ordered by the Government of India into the incidence of hookworm disease amongst miners (of all sorts), it became my duty to report upon the health of the miners employed in the Khewra Salt Mines, which are located in the Salt Range in the north of the Punjab. The health of this community was notoriously bad, and it was generally assumed that ankylostomiasis was mainly, if not solely, responsible. I accordingly set up a laboratory at Khewra and made a systematic examination of the health of the community, which included an examination of the fæces of a large proportion of the miners, and of their wives and families. To my profound astonishment, although the majority of the miners were found to be infected with one or more helminths, not a single ovum of an ankylostome worm was detected. It is now known somewhat more definitely than in the year 1921 that ankylostomiasis is not a common disease in the Punjab ; but, as a result of recent observations at the Mayo Hospital, Lahore, at the Medical School at Amritzar and, more especially, of the helminth survey of India carried out by Dr. Chandler, of the Calcutta School of Tropical Medicine, it has been established that infection with ankylostome worms (not necessarily associated with clinical signs of ankylostomiasis) occurs with some frequency in the hill tracts of the Punjab and somewhat sparsely amongst the inhabitants of the plains. This being so, it is even more of a matter of surprise that a community, working under extremely unhygienic conditions and in an environment apparently favourable to infection (on account of great heat and humidity, work has to close down in the mines during the monsoon months, July to September), should escape completely. I made the suggestion in my report, which unfortunately was not published and which is not now available, that the heavy impregnation of the soil with common salt might exercise an inimical influence upon the hookworm larva during its extra-corporeal phase, and that this circumstance might be responsible for the remarkable immunity of the miners from ankylostomiasis.

Malaria was proved to be the chief cause of ill-health of the miners at Khewra, and no attempt was made to follow up the above suggestion or to determine, by experiment, whether it was well founded ; but in view of the experimental work of Lambinet and others, to which Colonel Clayton Lane alludes, it seems certain that transmission of infection would be impossible in a soil heavily impregnated with salt and that this circumstance might account for the absolute freedom of the Khewra miners from infection. The free use of common salt in coal and other mines, where ankylostomiasis constitutes a menace to health, would thus appear to constitute, as Colonel Clayton Lane remarks, a simple and effective remedy for eradicating hookworm infection from mines ; but surely one may go further and say that the use of common salt would prove equally valuable in all areas, such as the vicinity of latrines, where infection is peculiarly liable to be contracted.

I am, Sir, yours faithfully,

C. A. GILL,
Lt.-Col., I.M.S.

Simla, June 14th, 1928.

PERICARDIAL KNOCK.

To the Editor of THE LANCET.

SIR,—The case of pericardial knock described in your issue of June 16th by Dr. W. A. Lister recalls a certain soldier, whom I saw, in consultation, at the Bermondsey Military Hospital during the war. On

approaching the patient, and when still some yards from the foot of the bed, both his heart sounds could be heard clearly. There was no marked constitutional disturbance, so that the heart's action was not accelerated. The result was that the effect produced on the ear resembled that of a grandfather clock. The history was that this phenomenon had been observed for nearly two days. On examining the chest there was evidence of the presence of fluid on the left side, and an exploratory puncture was advised. The chest was not, however, explored, for a few hours later a bronchial fistula developed; the patient coughed up the contents of an empyema, and the heart sounds became normal. The fact that the conduction of the heart sounds disappeared when the pressure of the empyema was removed gives support to Lister's view as to the cause of their conduction—viz., that the sounds arise in the left pulmonary artery, that they are due to tension or distortion of that vessel, thus partially obstructing it, and that they are analogous to the sounds heard when estimating the blood pressure by auscultation. If this is the right explanation, the term "pericardial knock" seems to be a misnomer.

All the other cases have been in association with a wound of the chest—indeed no such case, prior to Lister's, appears to have been recorded in civilian practice. The loudness of the sounds also renders the Bermondsey case notable, for only in Munden's[1] patient, whose heart sounds could be heard 6 or 8 ft. from the chest, and for an hour only before death, was anything like the same loudness recorded. Maynard Smith[2] states that the sounds may sometimes be heard when standing at the foot of the bed, but he makes no reference to their having been heard further off than this. Finally, Rees and Hughes[3] state that the sounds could not be heard at a greater distance than a few inches from the chest in any of the cases which they had collected.

I am, Sir, yours faithfully,

H. E. SYMES-THOMPSON.

Wimpole-street, W., June 27th, 1928.

VARICOSE ULCERATION: ULTRA-VIOLET LIGHT AND UNNA'S PASTE DRESSINGS.

To the Editor of THE LANCET.

SIR,—In answering Dr. Weinbren's criticism in THE LANCET of June 23rd, of my paper on varicose ulcers in the number of May 5th, I must express my regret that some of the points at issue relate to figures in the statement of details (Table C) which unfortunately had to be omitted for reasons of space. This table, as was noted in a footnote to my article, is available for inspection by anyone interested.

1. It is stated in my paper that a relatively large proportion of suberythema doses were given because the ulcers having them "on the whole ran a more favourable course than those having stronger doses." In other words, the smaller percentage of stronger doses is directly referable to their inefficacy. In those cases in which they were used (in 83·8 per cent. of 31 cases for the air-cooled, and 19·3 per cent. for the water-cooled lamp) they were abandoned after what was, in my judgment, a reasonable trial of consecutive doses when, and only when, there appeared to be no justification for their continuance. Since Dr. Weinbren does not give the total number of doses concerned in his calculation, the percentages convey very little. Ten per cent. of doses with the water-cooled lamp in a total of, say, 1000 doses, would represent a very appreciable trial, whereas 10 per cent. of 10 doses would indeed be negligible.

2. The ulcers were treated twice or thrice weekly except, as stated, in the few cases in which an unusually strong dose was given. The figures of duration of the light treatment in the addendum have doubtless misled Dr. Weinbren, because they relate to the whole period during which no treatment other than ultra-violet was given, and they therefore include in certain cases deliberately planned intervals for observation between sets of consecutive doses. It was always possible that intermittent treatment would be actually beneficial when the results of continuous treatment were unsatisfactory. The scheme of dosage would have been more clearly seen had I indicated when these intervals occurred, even at the risk of making the table still more cumbersome. Without this indication an accurate analysis on the lines attempted by Dr. Weinbren is in no way possible.

3. I greatly regret the oversight which led to the omission of the unmeasured ulcer, which "covered three-quarters of the leg," from the irradiated series. The addendum shows that this ulcer was not treated with Unna's paste; the surgeon-in-charge advised amputation.

I can see no indication in the report that the "worst ulcers" were treated with Unna's paste. If this assumption is based on the fact, as stated, that the area of the largest ulcer in the Unna series was greater than in the light series, then the omission to which I refer above is sufficient to upset it. Since the figures of the average size which Dr. Weinbren gives "may," by his own admission, include whole ulcers, where only a part was treated, I can hardly accept them. In any case, my work has not given me the impression that the worst ulcers, within limits, are necessarily the largest. The rate of healing may be more rapid in large than in small ulcers, and the last stages are often the most intractable.

4. The ambulatory cases receiving irradiation wore no support other than their ordinary bandages, in order that the issue might not be confused by the simultaneous adoption of two lines of treatment. The evidence of the healing which occurs with Unna's paste clearly shows the fallacy involved in attempting to judge the effect of synchronous treatment when the veins are well supported. Dr. Weinbren himself, in the last number of the *British Journal of Actinotherapy* (I quote from memory, as I am away from home), expresses the opinion that the rate of healing under ultra-violet light is to some extent dependent on the use of adjuvant factors. I agree with him. That is what my experience has taught me; but his adjuvant factor is my essential factor.

I am, Sir, yours faithfully,

June 24th, 1928. DORA C. COLEBROOK.

[1] Munden, W. H. P.: Brit. Med. Jour., 1918, i., 175.
[2] Smith, S. Maynard: Ibid., 1918, i., 78.
[3] Rees, W. A., and Hughes, G. S.: THE LANCET, 1918, i., 55.

REMOVAL OF THE RIGHT CEREBRAL HEMISPHERE IN MAN.

To the Editor of THE LANCET.

SIR,—In your interesting annotation in THE LANCET of June 30th (p. 1337) it is stated that in Dandy's successful case of removal of the right cerebral hemisphere "hearing remains normal in both ears, a finding which disposes of the assumption that there is cortical representation for hearing in the right temporal lobe." This inference, as I understand it, is not deducible from the facts which really go to support the assumption or, rather evidence, that there is cortical representation on each side for both ears. In support of this I would quote the late Sir Frederick Mott's case of a woman in which a vascular lesion of the left cortical centre led to word-deafness, from which she recovered and got married. She unfortunately sustained a vascular lesion of the right cortical centre and only then became quite deaf. Karl Grahe's pathological investigations on central disturbances of hearing[1] showed that in damage to one cortical centre hearing for speech is only slightly diminished, the diminution being more marked in the ear opposite to the lesion.

[1] Zeits. f. Hals- Nas.- u. Ohrenheilk., 1923, vi., 498.

The representation of each cochlea in both cortical centres is unquestionable and indispensable; for if, for instance, the left cortical centre were in connexion with the right ear only we would presumably find ourselves afflicted with word-deafness if this ear were stopped up, which is obviously absurd.

It is, therefore, quite natural that the loss of the right cerebral hemisphere should not involve deafness of either ear. The loss of the *left* hemisphere would no doubt (in a right-handed patient) entail "word-deafness," if only for a time, as in Mott's classical case.

I am, Sir, yours faithfully,

London, July 2nd, 1928. JAMES DUNDAS-GRANT.

ACUTE APLASTIC ANÆMIA.

To the Editor of THE LANCET.

SIR,—In referring to the treatment, followed by recovery, of the case of this hitherto rapidly fatal disease recorded in my book, your reviewer (THE LANCET, June 23rd, p. 1285) states that "numerous therapeutic products of one sort and another" were used, and suggests that, therefore, it is impossible to assess the part played by injections of liver substance. This conveys the impression that the treatment was of the "blunderbuss" type. Over a period of 3½ months three treatments were used (if we exclude such medicaments as rhubarb and soda, calomel, and the mild measures directed against the intestinal infection, none of which can have had any effect on blood regeneration). These treatments were hemostyl, liver substance, and vaccines. The stock vaccines were given sporadically to combat complicating catarrhal infections. Diet can be excluded as a factor, since the child was on a dietetic régime supervised from birth and, if anything, the diet was less adequately supplied with vitamin A and fats during the illness than before it—a point dealt with by me in criticising Koessler's views regarding the importance of these substances in blood regeneration. We are left with hemostyl and liver substance as therapeutic measures, and the alternative possibility of spontaneous recovery. This last can be ruled out by the fact that no case of recovery from *acute* aplastic anæmia has been recorded. The two cases quoted from my book by your reviewer were of chronic aplastic anæmia and were introduced to support my argument regarding a liver hormone-organ controlling blood production. One of them could only be traced for 12 months after the reported recovery, and the other (Gibson's case) has not completely recovered, and was still under treatment with an abnormal blood count some months ago. My case is now running about and apparently normal, having had no liver treatment (except for one week in May) since February.

Treatment by hemostyl and by liver substance only overlapped for three days—i.e., from Nov. 5th to 8th. In spite of the reaction in the platelet system during hemostyl treatment, the other marrow-formed elements continued to descend, the polymorphs reaching one of the lowest counts recorded in the literature. After five days of liver treatment regeneration was observed. The total number of the polymorphs was taken as the index of efficacy of the treatment throughout, and their curve closely followed the dosage curve. The reticulocyte count to which others attach so much importance (following the lead of the Americans), was not used, mainly because its value is more qualitative than quantitative, and it cannot therefore be as serviceable a guide to dosage. Throughout the period of liver disturbance the total polymorph count shows a quantitative relationship to the amount of liver substance injected, and was a most valuable guide to dosage. Armed with the convictions tentatively put forward in my book, I have since treated a number of cases of varying degrees of depressed bone-marrow function with injections of liver substance; the results, which will be published later, are most gratifying.

Others have proclaimed the uselessness of liver therapy in aplastic anæmia. The recorded data upon which this misleading pronouncement is based are inadequate and unscientific. Masses of liver by the mouth, even concentrated extracts by the mouth, are a crude form of treatment compared to hypodermic medication. Successive blood counts, unless taken at the same time each day in a particular case, are not a true indication of progress, particularly in children. Counts done by different individuals on the same patient increase the margin of error due to the personal equation and cannot be compared with counts done by a single skilled pathologist; this especially applies to platelet counts. When one contemplates the helplessness of the physician confronted with this dreadful illness a life-saving measure, which at least has the merit of simplicity, is deserving of respect.

I am, Sir, yours faithfully,

Bradford, June 28th, 1928. A. HAYES SMITH.

ENCEPHALO-MYELITIS FOLLOWING VACCINATION.

To the Editor of THE LANCET.

SIR,—In a recent letter in your columns we reported six cases of acute meningo-encephalo-myelitis, with the statement that these cases "differed in many respects from acute epidemic encephalitis and showed a marked clinical similarity to post-vaccinal encephalitis." Prof. Ledingham, writing on June 16th, states that this "would imply that this latter affection possesses a more or less stereotyped symptomatology." We cannot agree that our letter contained such an implication, and we are as familiar as Prof. Ledingham with the variability of the clinical pictures. Our six cases present this variability in a striking manner. Thus we state that "cervical rigidity and Kernig's sign were present in four cases and trismus in one. . . . Aphasia was noted in two cases, quadriplegia in one, hemiparesis in one, and in one the principal signs were those of a myelitis." The variability of our cases, in fact, appeared to us to be a further point of resemblance between them and post-vaccinal encephalitis.

It is a matter of general experience that many diseases present an extremely variable clinical picture. This is notably the case with encephalitis lethargica and with disseminated sclerosis, but this fact does not debar us from regarding them as clinical entities and from speaking of resemblances and differences between them.

We are, Sir, yours faithfully,

DONALD HUNTER.
W. RUSSELL BRAIN.

London Hospital, Whitechapel, E.,
July 2nd, 1928.

GLASGOW HOSPITALS.—On Friday in last week the Prince of Wales attended one of seven performances of a Scottish historical pageant in the grounds of Garscube House, Glasgow, in aid of the building fund of the Incorporated Glasgow Dental Hospital. Many of the characters were impersonated by their descendants. The existing hospital premises have been condemned as "a derelict dwelling-house" and insanitary, with no possibility of making provision for dental research.—The annual report of the Glasgow Royal Hospital for Sick Children states that the number of in-patients has grown from 1089 in 1907 to 7143 in 1927, and the out-patients' attendances from 42,302 to 83,591. In 1907 the ordinary expenditure was £7861; last year it was £38,039. The first part of the programme of enlargement has now been completed, and the provision of better accommodation for the nurses and domestic staff has made two more wards available for patients. Progress will now be made with the new admission block, which will not only provide for a greatly increased number of out-patients but will provide space on the upper floors for nearly 100 patients. A lecturer on biochemistry in relation to infancy and childhood is about to be appointed in the University of Glasgow, and he will be biochemist to the hospital and work in its laboratory. It is also hoped shortly to establish a research lectureship on the pathology of the diseases of infancy and childhood. The endowment of £15,000 for this purpose is being provided by Mr. William G. Gardiner and Sir Frederick Gardiner.

Obituary.

EDGAR MARCH CROOKSHANK, M.B. Lond.,

EMERITUS PROFESSOR OF COMPARATIVE PATHOLOGY AND BACTERIOLOGY, KING'S COLLEGE, LONDON.

WE regret to announce the death of Dr. E. M. Crookshank, which occurred on Sunday last, July 1st, at his country house, Ridge Hill Manor, East Grinstead, in his seventieth year.

Edgar March Crookshank, the son and grandson of soldiers, from school age showed a bent towards natural science. He was educated at King's College School and, proceeding to the hospital, obtained the diploma of M.R.C.S. in 1881, graduating in medicine at the University of London three years later. His career as a student was distinguished, for he gained both exhibitions and scholarships at King's College, while he won the gold medal in anatomy in the examination for the London M.B. Lister arrived in London to take up his appointment at King's College Hospital at the time when Crookshank was completing his training. The Listerian doctrines were practised more rigidly at King's than at any hospital in the metropolis, and Crookshank, one of Lord Lister's dressers, acted as house surgeon to the institution. Owing to this fact, as much as to certain family influence, Crookshank was selected for special duty in the Egyptian Expedition of 1882; he was present at the battle of Tel-el-Kebir, and received the Khedival Star and other decorations.

Following on his experiences of antiseptic surgery in military campaigning, of which he wrote at the time a very sound account, Crookshank decided to make the study of bacteriology his professional career. He proceeded to Paris, where Pasteur, who had already made his famous studies on fermentation, was at work on the problems of rabies, and welcomed the pupil of Lister. Thence he went to Berlin, and studied under Koch, at that time Director of the Institute of Health, and engaged in perfecting his original discoveries in relation to tuberculosis. The result was the publication by Crookshank, in 1886, of a "Manual of Bacteriology" which met with a good reception on its appearance, and secured for its writer the professorship of bacteriology at King's College. Here he founded the laboratory for human and veterinary pathology and did much educational work in connexion with these subjects. He wrote largely and taught energetically, and showed considerable independence of attitude. For example, with regard to vaccination, he followed the lines laid down by that great historian of epidemiology, Charles Creighton, but he attempted also to find grounds of his own for dissent from much accepted teaching. In many places his criticisms of popular conceptions were no doubt sound, and this would to-day be admitted, but he was not able to make converts through his own reasoning to the views which he proposed to substitute. He retired from active work at King's while still a young man, and it is over 30 years since the fourth and last edition of his text-book of bacteriology appeared. But by that time the work was no longer up to date, in spite of reconstruction, revision, and enlargement. In its day, however, it was a valuable contribution to the literature of what was still a new subject; it was inclusive—ambitiously so; it was well illustrated, both by original illustrations and by loans from the best sources; it was furnished with appendices, in which practical instructions were given as to the fitting-up of the laboratory; and it had a bibliography through which readers could obtain a real introduction to French and German literature.

On his resignation of his post as active professor in 1889, he was given Emeritus rank and elected a Fellow of King's College: but he carried into retirement a keen interest in medical and especially veterinary problems, while his interest in local administration was widely manifested. In 1894 he was appointed J.P. for Sussex, and became at once an active member of the Bench, taking a prominent part in the public life of the district, while he stood for the East Grinstead Parliamentary Division of the County as a Unionist. He took, further, advantage of all opportunities for travel always combining his sporting proclivities—and he was an accomplished hunter of big game—with careful investigations into the various social problems of the places which he visited, and these included South Africa, Australia, Canada, and the West Indies. Thus he familiarised himself with the productive powers of most of the countries under our Colonial administration. All these experiences confirmed him in his deep interest in veterinary surgery, manifested early in the circumstances of the founding of the bacteriological laboratory at King's College. He was for nearly 40 years one of the governors of the Royal Veterinary College, and presided at different times over the committee of management of the Research Institute and of the General Purposes Committee, and took a prominent part in the appeal for rebuilding the present College in Camden Town.

Prof. Crookshank married, in 1885, Harriet, only daughter of Thomas Colfax, J.P., of Bridport, by whom he had two sons and three daughters.

HENRY HANDFORD, M.D. Edin., F.R.C.P. Lond., D.P.H.

Dr. Henry Handford, who died on June 24th at the age of 73, long played an important part in the public life of Nottingham and its county, first as clinician and later as administrator. A son of Dr. Thomas Handford, who practised at Atherstone, in Warwickshire, he was educated at the University of Edinburgh, where he proved a brilliant student, winning University medals in physiology, pathology, medicine, clinical surgery, midwifery, and other subjects. After graduating as M.B., C.M. with honours in 1878, he took up an appointment as medical tutor at Queen's College, Birmingham. It was not long, however, before he decided to settle in Nottingham, and as physician to the General Infirmary he soon won a high reputation for wide learning. Though he read extensively, his knowledge was chiefly his own, acquired by diligent observation and exact examination of his patients. The signs and symptoms which they presented were always interpreted as far as possible in the light of the most recent pathological knowledge available, and Handford was himself a careful student of pathology. As an illustration of his methodical research we may recall a demonstration before the Nottingham Medical Society in 1884, when he showed numerous pure cultures of pathogenic organisms, and in the following year when he showed microscopical preparations of *Bilharzia hæmatobia* and sections from cases of choreic insanity, myelitis, actinomycosis and supposed malignant pustule. This list is evidence of the wide range of his interests, and their catholicity is further shown by the titles of papers read before the Pathological and Clinical Societies of London, of which he was a keen member. In 1904 he described a case of heart-block and demonstrated the causative lesion, a gumma in the bundle of His; and many papers in medical journals bore witness to his special interest in cardiology. In 1899 the value of his contributions was recognised by his election as a Fellow of the Royal College of Physicians of London, of which he had become a Member in 1885. Seven years later he resigned his post of honorary physician to the General Hospital on being appointed medical officer of health for the county. In this new work he displayed the same thoroughness, conscientiousness, and courtesy to those with whom he worked, but his friends could not but regret the loss to clinical medicine in the city. During his 26 years of office he found much to do for the welfare of the county, and also served a term of office as president of the Midland Branch of the Society of Medical Officers of

Health. "Those who knew him well," writes a colleague, "admired him equally for his excellence as physician and for his qualities as a man. No one could be more kind and courteous than he was at all times and under all circumstances: there was about him a sort of refined dignity of bearing which compelled respect. A love of literature and music and a great hatred of any approach toward untruthfulness completed the picture of the truly cultured gentleman."

Dr. Handford married a daughter of the first Lord Belper, and she survives him. His two sons were killed on Jan. 1st, 1916, at the Hohenzollern Redoubt.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

DUTY ON SCIENTIFIC FILMS.

On Tuesday, July 3rd, the House of Commons went into Committee on the Finance Bill, Mr. J. F. HOPE, Chairman of Committees, in the chair.

Captain FRASER moved a new clause to exempt from duty films recording scientific investigations or research which are imported into Great Britain or Northern Ireland when the Commons were satisfied that the films would not be sold or hired or publicly exhibited for profit. He said that the man who had carried out researches with a microscope, or in other directions of a scientific, and particularly of a medical-scientific kind, now found it possible, through the technique which had been developed, to record those researches and investigations upon a film instead of upon paper. The free interchange of the results of these investigations was something which no taxation should be allowed to impede.

Dr. DRUMMOND SHIELS seconded the new clause. He said that, even in the few years since 1925, the importance of these scientific films had considerably increased. Many of them had originated in America, Germany, and other countries, and they had proved most valuable for teaching and scientific purposes. There ought to be free trade in all that appertained to science and research. The only possible objection he could see was that of administration, but it should be possible for the scientific bodies to which such films would be consigned to give a certificate which would make it possible to work this exemption without causing much administrative difficulty. He hoped that the Chancellor of the Exchequer would receive the proposal in a sympathetic spirit.

Mr. A. M. SAMUEL (Financial Secretary to the Treasury) said that this clause had received the most careful consideration, with a desire, if possible, to give effect to it. It had been found, however, that, in these days of popular science, it would be impossible for the Revenue authorities to distinguish the scientific films from those which could be shown in the ordinary way, and to be sure that the former were not subsequently shown in picture-houses.

Captain FRASER assured the Chancellor of the Exchequer that the films to which the clause referred were only of scientific interest and were in no sense of the word "popular."

Mr. CHURCHILL said that while he could give no undertaking in the matter, he would see that the facts were examined again. Those responsible for making that inquiry would receive any further evidence that Captain Fraser might bring forward.

The proposed clause was then withdrawn.

HOUSE OF LORDS.

THURSDAY, JUNE 28TH.

Dogs Act (Amendment) Bill.

The Earl of CRANBROOK moved the second reading of the Dogs Act (Amendment) Bill which has passed through the Commons. The measure, he explained, extended the liability of the owner of a dog which did injury to poultry. The Bill also dealt with the delivery of stray dogs to the police.

Viscount BERTIE of THAME pointed out that whereas under the principal Act no dogs could be sold for vivisection, found dogs under this Bill were not so protected. In Committee he would move an amendment to bring the Bill into line with the present law in that respect.

The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 27th.

Small-pox in England and Wales.

Mr. SHEPHERD asked the Minister of Health the number of cases of small-pox reported for England and Wales for the latest week available; and the number of cases discovered amongst casuals during any convenient period.—Mr. CHAMBERLAIN replied: The provisional number of notifications of cases of small-pox in England and Wales for the week ended June 23rd last was 230. I have no precise information as regards the latter part of the question, but during the period Jan. 24th to June 25th, 1928, 124 cases of small-pox have been reported among casuals.

Health Insurance Benefits and Outdoor Relief.

Mr. LANSBURY asked the Minister of Health what instructions, if any, he had issued to his inspectors and to public auditors in connexion with poor-law relief to persons in receipt of national health insurance benefit; and whether he was aware that his officers and certain auditors were forcing boards of guardians to take into account health insurance benefits when assessing outdoor relief, despite the fact that the Insurance Acts expressly provided that boards of guardians should not take health insurance payments into account when assessing the need of applicants for poor-law assistance.—Sir KINGSLEY WOOD replied: My right hon. friend has given no instructions of the kind suggested in the first part of the question. The answer to the second part is in the negative. I would, however, remind the hon. Member that boards of guardians are only precluded from taking into account health insurance benefits up to 7*s.* 6*d.* a week.

Inspector of Medical Supplies.

Mr. JOHN PALIN asked the Secretary of State for War whether the inspector of medical supplies employed at the War Office was a qualified pharmacist; and whether it was part of the duties of the inspector of medical supplies employed at the War Office to pay periodical visits to the medical store depôts for the purpose of inspecting medical supplies and of ascertaining whether due care was being exercised in respect of the storage of such medical supplies.—Sir L. WORTHINGTON-EVANS replied: The inspector is qualified; there is only one Army medical store depôt; it is not part of his duty to inspect it.

Mr. PALIN also asked the Secretary of State for War whether the advice of the inspector of medical supplies had been taken as to what medicinal preparations used by the Army could be conveniently and economically prepared in the dispensing laboratories of Army hospitals.—Sir L. WORTHINGTON-EVANS replied: Yes, sir.

Silicosis and Workmen's Compensation.

Mr. WILLIAM HIRST asked the Home Secretary the total number of claims at the latest available date under the Workmen's Compensation Act, in connexion with the silicosis scheme, by July, 1927, and the number as affecting Birmingham and Sheffield respectively.—Sir WILLIAM JOYNSON-HICKS replied: I presume the hon. Member refers to the scheme for the metal grinding industries which came into operation on July 1st last year. I regret that I am unable at present to give any figures, but information as to the number of cases in which compensation was paid under this scheme during the six months, July to December, 1927, is being collected and will be available later.

THURSDAY, JUNE 28TH.

Allowances to Mentally Deficient Orphans.

Sir RICHARD LUCE asked the Minister of Pensions if he would consider the possibility of extending benefit under the Pensions Act to the orphan children of pensioners who were mentally or physically deficient after they reached the age of 21.—Major TRYON replied: I have no authority under the Royal Warrants to continue allowances, which normally cease at the age of 16, beyond the age of 21. I have, however, taken, and am taking, measures within my powers, and without encroaching on the obligations of local education and health authorities in the matter, to coöperate with other agencies in securing such suitable treatment or training of the children before they reach the age of 21 as will enable them as far as possible to contribute to their own support.

Medical Inspection of Casuals.

Mr. SHEPHERD asked the Minister of Health when the order for the medical inspection of casuals expired and whether it was his intention to extend it.—Mr. CHAMBERLAIN replied: I am extending the present direction on this subject, which expires at the end of this month, to the end of September next.

Welsh Board of Health.

Mr. JOHN WILLIAMS asked the Minister of Health whether he could make any statement to the House on the future constitution of the Welsh Board of Health; whether it was proposed permanently to reduce that body to three; and what the number of the body was when originally set up.—Mr. CHAMBERLAIN replied: The Welsh Board of Health consisted of three members when it was originally constituted. At a later date the administrative officer for public health became an ex-officio member of the board. With regard to the first and second parts of the question, I would refer the hon. Member to the answer given on June 25th.

Mr. JOHN asked the Minister of Health who was the present Member for Wales on the National Health Insurance Joint Committee; who would be the member in future; and whether Mr. John Rowland, a member of the Welsh Board of Health, was to act as deputy for him.—Mr. CHAMBERLAIN replied: The present member of the National Health Insurance Joint Committee appointed by me under Section 88 of the National Health Insurance Act, 1924, as "a person having special knowledge and experience of National Health insurance in Wales," is the hon. Member for Monmouth, and I do not propose to make any change. I have appointed Mr. John Rowland to succeed Sir Thomas Hughes as deputy to the hon. Member for Monmouth at meetings of the Committee at which the hon. Member is unable to be present.

Captain ARTHUR EVANS asked the Minister of Health if he would consider the advisability of appointing one of the present reduced Welsh Board of Health a member of the joint consultative committee of the United Kingdom, instead of appointing a deputy for a representative whose official connexion with the Welsh Board of Health has now terminated.—Mr. CHAMBERLAIN replied: My hon. friend appears to be under some misapprehension. The hon. Member for Monmouth, who is and has for some years been the Welsh representative on the National Health Insurance Joint Committee, is not in any way officially connected with the Welsh Board of Health. The retiring chairman of the Welsh Board of Health was appointed to act as deputy to the hon. Member for Monmouth at meetings of the Committee at which the hon. Member was unable to attend, and I have now appointed a member of the Welsh Board of Health to act in the same capacity.

Captain EVANS also asked the Minister of Health, seeing that the actual saving effected by not appointing one of the present reduced Welsh Board of Health as chairman was approximately £300 per annum, and that the status and influence of such an important board must be detrimentally affected by the exclusion of a chairman, whether he would appoint one of their present number chairman.—Mr. CHAMBERLAIN replied: The status and functions of the Welsh Board of Health are not, in my view, affected by the decision not to appoint a chairman. The bulk of the work of the board is satisfactorily done by the members of the board in their individual capacity, and meetings of the board are but rarely held. The answer to the last part of the question is in the negative.

Unclaimed Bodies for Anatomical Examination.

Mr. KELLY asked the Minister of Health the reason for the request made by his department that unclaimed bodies of deceased patients in the Park Prewet and Brookwood Asylums, and other mental institutions under the Farnham Union, should be handed over to the University of Oxford for anatomical examination.—Mr. CHAMBERLAIN replied: The request to which the hon. Member refers has been made to these and other similar institutions in order to assist in the provision, under proper safeguards, of unclaimed bodies for anatomical examination, which is indispensable to medical education.

MONDAY, JULY 2ND.

Biochemical Research.

Miss WILKINSON asked the President of the Board of Trade what aid, financial or otherwise, the Government was giving to promote research into the practical application to industry of the science of biochemistry.—Mr. H. G. WILLIAMS (Parliamentary Secretary to the Board of Trade) replied: A considerable amount of biochemical research is conducted by the Department of Scientific and Industrial Research, particularly in relation to its investigations on the preservation and transport of foodstuffs. The Department also makes grants to a number of coöperative research associations, organised by various industries to investigate their own special problems, whose work is partly of a biochemical nature. As this work is closely linked up with other work not directly biochemical in nature, it is impossible to estimate its cost separately.

Refuse Burning in Louth and Public Health.

Lieut.-Colonel HENEAGE asked the Minister of Health if he had received a resolution signed by inhabitants of Louth calling attention to the burning refuse pit in the town, which was so situated that odours and smoke were causing danger to health and annoyance to inhabitants; and what reply he had returned.—Sir KINGSLEY WOOD replied: My right hon. friend has received a petition in reference to this matter, and is communicating with the town council.

The Rating of Voluntary Hospitals.

Captain CAZALET asked the Minister of Health whether he was aware of the inconsistencies prevalent to-day throughout the country in regard to the rating of voluntary hospitals; that in Devon the rating assessment committees had resolved that voluntary hospitals in that county should be rated at 7*s.* 6*d.* per bed, including nurses' beds, while in Wiltshire the rating and assessment committees had adopted the basis of £5 per head additional to nurses' beds; and whether he could give to the House the assurance that such inequalities would be removed under the new Valuation and Rating Act.—Sir KINGSLEY WOOD replied: The Central Valuation Committee has reported the existence of considerable diversity of practice in the assessment of voluntary hospitals. My right hon. friend has circulated the Committee's recommendations on this matter to the local authorities concerned, but he is not empowered to interfere with their discretion in the assessment of any class of hereditament. I may add that the matter is not germane to the Government's proposals for giving relief from rating burdens to agriculture and industry.

Spitting in Public Places.

Major COLFOX asked the Minister of Health whether he would, in the interests of public health, introduce legislation to prohibit the practice of spitting in public places.—Sir W. JOYNSON-HICKS replied: No fresh legislation is required. The matter is one which can be dealt with by the local authorities by means of good rule by-laws under the Municipal Corporations Act and Local Government Act. By-laws on the subject are in force in a number of places.

Destruction of Lost or Strayed Dogs.

Sir ROBERT GOWER asked the Home Secretary whether his inspectors' reports showed that adequate accommodation existed at all police stations for the reception of lost and strayed dogs; and what methods were adopted by the police for the humane destruction of lost or strayed dogs which were not claimed by their owners.—Sir W. JOYNSON-HICKS replied: I have no information as to the arrangements outside London, but in the Metropolitan Police District the accommodation is adequate, and it is a condition required of the contractors that the dogs handed over to them which are not claimed should be destroyed in such manner as to cause as little pain as possible.

TUESDAY, JULY 3RD.

Medical Services in Scotland.

Sir ARCHIBALD SINCLAIR asked the Secretary of State for Scotland whether his attention had been drawn to the statement in the Report of the Scottish Board of Health that the gap was widening between the standard of medical services in the Highlands and that in the Lowlands; and what provision was being made for the maintenance and improvement of the Highlands and Islands medical service during the current year.—Sir J. GILMOUR replied: The statement referred to expresses the view of the Consultative Council on Highlands and Islands, whose report I have seen and am now considering. As regards the second part of the question, the money available in the Highlands and Islands (Medical Service) Fund is sufficient to maintain the medical services on their present scale during the current year. It is anticipated, however, that the fund will be exhausted by the middle of next financial year, before which time the question of what further financial provision should be made will be fully considered in the light of the whole circumstances of the case.

Sir A. SINCLAIR asked if provision would be made in the meantime for catching up the leeway as well as for maintaining these services at the lower level to which they had fallen.

Sir J. GILMOUR said that the provision for this year had been made and would be carried out to the full.

THE ASTHMA RESEARCH COUNCIL.—A part-time research scholarship is being founded to investigate the various physical treatments of asthma. The selected candidate will be required to visit Mont Dore and other continental resorts for the treatment of asthma prior to taking up the work in London, and preference will be given to one who already holds a professional post. An advertisement in this issue of THE LANCET sets out the conditions of the appointment. Dr. E. A. Cockayne and Colonel F. E. Fremantle, M.P., have joined the Medical Advisory Committee of the Council.

Medical News.

UNIVERSITY OF OXFORD.—At a Congregation held on June 28th the following degrees were conferred :—

D.M.—A. A. F. Peel and F. E. Fremantle.
B.M.—F. G. Parker.

Dr. John Farquhar Fulton has been elected to a research fellowship in natural science at Magdalen College. Dr. Fulton came to Magdalen as a Rhodes Scholar in 1921. He obtained a first class in the final honour school of physiology in 1923, and subsequently the degree of D.Phil. by research. He returned to Harvard, and since completing his courses for the D.M. degree of that University has been working in Dr. Harvey Cushing's clinic. He proposes to carry on research in physiology and to write on the history of physiology and the bibliography of the works of Robert Boyle.

UNIVERSITY OF BIRMINGHAM.—At recent examinations the following candidates were successful :—

M.D.

J. F. Brailsford and F. W. M. Lamb.

FINAL EXAMINATION FOR M.B., CH.B.

Second-class Honours.—G. H. Knight,* and A. B. Taylor.†

* Distinction in Medicine and Surgery.
† Distinction in Medicine and Midwifery.

Pass.—Mohamed Badr-El-Din, Charles Davies, I. K. Donovan, R. E. Johnson, C. E. Perry, F. R. Roberts,‡ M. C. Rosser, M. D. Sandoz, J. G. Stooke, and Nubar Yacoubian.

‡ Distinction in Midwifery and Diseases of Women.

FINAL EXAMINATION FOR B.D.S.

Class I.—A. T. Wynne.

FINAL EXAMINATION FOR DIPLOMA IN DENTAL SURGERY.

F. W. Hanlan, W. F. Hinds, and E. E. Newitt.

UNIVERSITY OF DURHAM.—At Convocations on June 26th and 27th the following degrees, diplomas, and licences were conferred :—

M.D.—Katherine M. Cellan-Jones, Margaret B. Herbst, I. M. McLachlan, T. H. Meek, P. J. O'Connell, L. G. Pearson, C. E. Reindorf, L. F. Richmond, T. W. Shaw, F. E. Stabler, and M. M. Suzman.
M.D. (*for Practitioners of 15 Years' Standing*).—Harold Balme.
M.S.—W. P. T. Watts.
M.B., B.S.—H. M. Brown, D. S. Buchanan, W. C. E. Diamond, M. A. Gaffar, Coley Goldstein, J. C. V. Hindhaugh, C. F. Ind, S. W. Smith, J. M. Tait, and H. G. Ungley.
B.S.—Ibrahim Girgis and L. G. Pearson.
B.Hy. and D.P.H.—T. L. J. Coxon, E. F. D. Dawson-Walker, and J. W. Hunter.
L.D.S.—Margaret I. Lamb, R. R. Maclean, C. E. Shafto, and G. S. Yeoman.

UNIVERSITY OF SHEFFIELD.—At recent examinations the following candidates were successful :—

M.B., Ch.B.—K. J. G. Milne,* G. B. Thomas,* W. Alcock, R. D. Dewar, T. E. Gumpert, T. K. Owen, W. A. Timperley, and Joan J. J. Wallace.

* With second-class honours.

UNIVERSITY OF GLASGOW.—At a graduation ceremony on June 29th the following degrees were conferred :—

M.D.—*Mary P. McCunn, Robert Armstrong, and David Henderson.

* With commendation.

The History of Medicine Prize was awarded to Dr. William James Rutherfurd for an essay entitled A Cock to Æsculapius.

UNIVERSITY OF ST. ANDREWS.—At a graduation ceremony on June 28th the honorary degree of LL.D. was conferred, among others, upon Dr. E. P. Cathcart, Gardiner Professor of Physiological Chemistry in the University of Glasgow ; and Dr. William Darrach, Professor of Surgery in Columbia University, New York.

UNIVERSITY OF DUBLIN.—At a meeting of the Senate on June 30th the honorary degree of Master of Surgery was conferred on Sir John Bland-Sutton ; the honorary degree of Doctor of Science on Dr. George Linius Streeter, director of the Department of Embryology in the Carnegie Institute, Baltimore, U.S.A. ; and the honorary degree of Master of Arts on Miss Margaret Huxley, an Overseer of Trained Nurses in Ireland. Of Sir John Bland-Sutton, the Public Orator, Sir Robert Tate, spoke as famous alike as operative surgeon, teacher, scientific investigator, and learned archæologist. Miss Huxley, generally regarded as the leading representative of nursing in Ireland, the Public Orator described as "feminam strenuam, certam, optimam" in reference to her magnificent work as matron of Sir Patrick Dun's Hospital. In the evening Miss Huxley was entertained at dinner by a large company of hospital matrons.

HUNTERIAN SOCIETY.—Dr. Arthur Westerman has been elected president of this Society for the coming year. The honorary secretaries are Mr. W. E. Tanner and Dr. D. C. Norris.

EPSOM COLLEGE : ANNUAL GENERAL MEETING OF GOVERNORS.—Dr. Raymond Crawfurd presided at the seventy-fifth annual general meeting of the Governors of Epsom College on Friday, June 29th, 1928, at the office, 49, Bedford-square, W.C., when there was a good attendance. The following is a list of the successful candidates for pension and foundation scholarships at the elections, together with the number of votes gained in each case. Dr. Raymond Crawfurd, Dr. J. Walter Carr, and Dr. Seymour Taylor were the scrutineers. Hadlow Pensioners : Dr. James S. Robertson, 4157 ; Mrs. Gertrude Middlemist, 3326 ; Mrs. Elizabeth Christian, 2485 ; and Mrs. Mary G. S. Kenny, 2086. Ordinary Pensioners : Mrs. Ellen M. Blake, 2057 ; Dr. Lambert Houghton, 2012 ; Mrs. Ida M. S. Style, 1672 ; and Dr. Vincent O. Taylor, 1634. Pugh Pensioner : Mrs. Mary K. Ingledew, 1481. Brodie Sewell Annuities : Miss Ella M. Leney, 2631 ; and Miss Elizabeth E. B. D'Olier, 1793. Foundation Scholars : Alfred G. Stansfeld, 17,657 ; Geoffrey G. Wallis, 13,079 ; John R. Copeland, 11,042 ; John A. K. Holburn, 10,757 ; John Watson, 10,496 ; Antony L. Haynes, 10,427 ; Louis C. Dillon, 8051 ; and Eric J. Holborow, 6531.

Dr. F. W. Collinson and Dr. R. W. Innes Smith were elected vice-presidents of the College in recognition of their valued services, each having collected a sum of over £1000 as honorary local secretary.

In proposing the adoption of the report for the past year, the Chairman referred to the progress of the fund opened for the provision of a new sanatorium, outline plans for which, together with full particulars as to the accommodation, were given in THE LANCET of Dec. 3rd last. Dr. Crawfurd pointed out that if two sums of £5000 were to be received, the Council would be in a position to put the work in hand, as the total collected to date amounted to close upon £5000. The College would benefit in another direction by the provision of this building, as the old sanatorium could be easily adapted for the admission of about 40 more boarders, and the enlargement of the school in this way would result in many economies. Furthermore, the increased income would enable the Council to improve the salaries paid to the masters.

BRITISH PATHOLOGISTS ASSOCIATION.—The second summer meeting of this association was held in the Pathological Department of the Royal Infirmary, Chester, on Saturday, June 30th, Dr. W. H. Grace, pathologist to the hospital, being in the chair. The meeting was devoted to the discussion of the methods used in the examination of the blood. Procedures were described and demonstrated as follows : by Dr. J. G. Greenfield, the making and staining of blood-films, the differential count of the white cells, the counting of the red and white cells, the estimation of hæmoglobin by the Hellige method, and the reticulocyte count ; by Dr. A. Renshaw, the examination of the blood for parasites and the presence of organisms ; by Dr. S. C. Dyke, the platelet count, the grouping and matching of bloods, and the estimation in the blood of cholesterol, bilirubin, and inorganic phosphates ; by Dr. Grace, the estimation of the blood-sugar by the Folin-Wu method ; by Dr. A. G. Shera, the estimation of the blood-sugar by MacLean's method and of the blood-urea by Kennaway's method ; by Dr. A. F. S. Sladden, the estimation of the blood-urea by a modification of MacLean's method ; and by Dr. W. E. Carnegie Dickson, the estimation of the serum calcium. The members of the staff of the Chester Royal Infirmary entertained the members of the association at dinner in the evening.

LONDON HOSPITAL PRIZE-GIVING.—The distribution of prizes on June 29th opened with a report on the Medical College by the Dean, Prof. William Wright. After referring to the knighthoods recently conferred on two old London Hospital men, Dr. J. A. Hosker, of Bournemouth, and Mr. H. S. Newland, of Adelaide, he mentioned that Sir Henry Head had been awarded the Moxon Medal of the Royal Society, and that Prof. Major Greenwood had been elected F.R.S. The hospital had lost, by resignation, the services of Dr. Lewis Smith and Sir Hugh Rigby, whose professional lives had been uninterruptedly linked with it. The vacancies thus left in the hospital staff had been filled by Dr. Russell Brain and Mr. Hugh Cairns, whilst Mr. G. V. Stephenson had been appointed demonstrator of anatomy in the College. Prof. Wright then spoke of the deaths which had occurred during the year, including those of Dr. C. W. Daniels, Mr. A. D. Dinnis, Dr. Nelson Younger, Mr. L. R. Fifield, and Dr. A. Lister. Another loss was sustained by the death of Mr. W. Douro Hoare, chairman of the College Board from 1898 to 1921, to whom the College owed much. A lectureship

in ophthalmology, said Prof. Wright in conclusion, had been established with a legacy of £1000 from Mr. Warren Tay.

The Chairman, Lieut.-Colonel W. M. Pryor, then introduced Sir Samuel Hoare, Secretary of State for Air, who came, he said, as the head of a family which had been intimately associated with the hospital and College for many years.—Sir Samuel presented the prizes and honorary certificates of merit awarded to students of the Medical College and Dental School. As the world grew more complicated, he said, it was more and more difficult for men in one profession to keep in touch with men in another. He came, therefore, to learn something about the London Hospital and to tell something about the development of aviation, and he was glad to think that there was already a link between the two in the person of Group-Captain Martin Flack, one of his senior medical advisers. The tests of fitness for flying had been developed by practice rather than theory. The investigators had started by taking their hundred best pilots and analysing their qualities. He wondered whether this method could be applied in the medical profession or in politics. In the profession of collecting money it would be unnecessary to look out for 100 beggars; they could simply analyse the qualities of Lord Knutsford. The medical profession, continued Sir Samuel, was trying to raise the standard of the world's health. He was engaged in attempts to improve its communications. These were the two first needs of the world to-day, especially in the less-developed parts of the British Empire. In recent military operations in the Kurdistan mountains there was a very serious outbreak of dysentery among the troops, but it proved possible, with aeroplanes, to remove the 200 sick to Bagdad, so that they all recovered.

A vote of thanks to Sir Samuel Hoare was proposed by Lord Knutsford, and seconded by Dr. Robert Hutchison.

CARLISLE FEVER HOSPITAL.—As the result of the recent inquiry, described in THE LANCET of June 16th (p. 1239), the Charity Commissioners have agreed to the transference of the Carlisle Fever Hospital to the corporation of the city. The claim of the city council to the control of the hospital was based upon the fact that, in conjunction with the rural district council, it had for many years past chiefly maintained the institution. The claim was opposed by the governing body of the Cumberland Infirmary, which is only 150 yards from the fever hospital, on the grounds that, in the event of further extension becoming necessary, the site of the fever hospital would provide the means of enlargement and that an institution for the treatment of cases of infectious disease is in its wrong place amid a considerable population.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, July 9th, to SATURDAY, July 14th.—ST. JOHN'S HOSPITAL, In-patient Department, 262, Uxbridge-road, W. Special demonstration at 2.30 P.M. on Tues.—ALL SAINTS' HOSPITAL, Vauxhall Bridge-road, S.W. Special demonstration at 2.30 P.M. on Wed.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Broad-street, W.C. Special demonstration at 3 P.M. on Thurs. The above are free.—ST. MARK'S HOSPITAL, City-road, E.C. —One week's special course in proctology. Operations, demonstrations, and lectures.—PRINCE OF WALES'S HOSPITAL, Tottenham, N. Two weeks' special course in medicine, surgery, and the allied specialties. Further particulars from the Secretary.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, July 9th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.

THURSDAY, July 12th.—4 P.M., Dr. Hector C. Cameron: Demonstration of Children's Ailments.

Appointments.

BRICKWELL, F., M.B. Lond., M.R.C.S., has been appointed Medical Officer, Slough and Stoke Poges Districts.

CONNAN, D. M., M.B., B.S. Lond., D.P.H., Medical Officer of Health for Bermondsey.

Manchester Royal Infirmary: TAYLOR, B. A., L.R.C.P. Lond., M.R.C.S., House Surgeon to the Special Departments; NUGENT, Miss E. A., L.R.C.P. Lond., M.R.C.S., Junior Assistant House Surgeon (Central Branch); SOMERFORD, A. R., M.B., Ch.B. Manch., Assistant Medical Officer, Out-Patient Department; STOKOE, Miss L., M.B., Ch.B. Manch., Clinical Assistant, Medical Out-Patient Department; ANDERSON, Miss J., L.R.C.P. Lond., M.R.C.S., Clinical Assistant, Surgical Out-Patient Department; PEACH, Mrs. E. M., M.D. Manch., Assistant Medical Officer, Dermatological Department; SCOTSON, F. H., F.R.C.S. Eng., reappointed Resident Surgical Officer; GRAY, E. D., M.A., M.B., Ch.B. Aberd., reappointed Junior Assistant Medical Officer, Radiological Department; SMIRK, F. H., M.D. Manch., reappointed Medical Registrar; LAMBERT, V. F., F.R.C.S. Edin., Assistant Surgical Officer, Aural Department.

Queen Charlotte's Maternity Hospital: LOWRY, H. C., M.B., B.Ch., B.A.O. Belf., F.R.C.S. Edin., Senior Resident Medical Officer; and HEGGS, G. B. M., M.R.C.S., L.R.C.P. Lond., Assistant Resident Medical Officer.

Salford Royal Hospital: APPLETON, F., M.B., Ch.B. Manch., House Surgeon attached to the Orthopædic Department; BOLAND, C. R., M.B., Ch.B., B.A.O., attached to the Genito-Urinary Department; and COCHRANE, H. L., M.B., Ch.B., attached to the Special Departments.

Certifying Surgeons under the Factory and Workshop Acts: JORDAN, G. R. L., M.B., B.Ch. Dub. (Halstead, Essex); and WILLIAMS, J. W., L.R.C.P. Lond., M.R.C.S., L.M.S.S.A. (Penarth, Glam.).

Vacancies.

For further information refer to the advertisement columns.

Association of Surgeons of Gt. Britain and Ireland, 17, Wimpole-street, W.—Surgical Scholarship. £350.
Asthma Research Council, London Clinic, Ranelagh-road, S.W.—Half-time Research Scholar. £300.
Barnsley, Beckett Hospital and Dispensary.—H.P. £140.
Bath, Royal United Hospital.—Asst. H.S. £100.
Birkenhead General Hospital.—Cas. H.S. £100.
Birmingham, Queen's Hospital.—Med. Reg. Also 3 Res. Surg. Officers. £200 and £100 respectively.
Brighton, Royal Sussex County Hospital.—Hon. Dermatological Clinical Asst.
Bury Infirmary.—Third H.S. At rate of £150.
Cambridge, Addenbrooke's Hospital.—Resident Anæs. At the rate of £180.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Jun. H.S. £50. Also Pathologist. £75.
Chichester, Graylingwell Mental Hospital.—Third Asst. M.O. £350.
Coventry, Coventry and Warwickshire Hospital.—Res. H.P. £125.
Eastcote, Middlesex, St. Vincent's Orthopædic Hospital.—Res. M.O. At rate of £150.
East London Hospital for Children, &c., Shadwell, E.—Res. M.O. £200.
Exeter, Royal Devon and Exeter Hospital.—Hon. Asst. P.
Exminster, Devon Mental Hospital.—Jun. Asst. M.O. £300.
Gordon Hospital for Rectal Diseases, Vauxhall Bridge-road, S.W.—Res. H.S. £75.
Harefield, Middx., County Tuberculosis Sanatorium.—Sen. Asst. Res. M.O. £450.
Herefordshire General Hospital.—H.P. At rate of £100.
Hospital for Consumption and Diseases of Chest, Brompton.—H.P. £50.
Kimberley Hospital, South Africa.—Radiologist-Jun. H.S. £750.
Lahore, Mayo Hospital.—Anæsthetist, Rs.500/-25-1000/- per mensem.
Leeds City Hospitals.—Med. Supt. £850.
Leeds Public Dispensary.—Sen. Res. M.O. £200. Also Hon. P.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.
London Jewish Hospital, Stepney Green, E.—Hon. Radiologist.
Maidstone, Kent County Ophthalmic and Aural Hospital.—Aural H.S. At rate of £200.
Manchester, St. Mary's Hospitals.—4 H.S.'s. Each at rate of £50.
Manchester, Salford Royal Hospital.—H.P. At rate of £125.
Marseilles, Queen Alexandra Memorial Hospital.—Res. M.O. At rate of £150.
Mental Hospital, Berrywood.—Locum tenens M.O. £7 7*s.* per week.

Miller General Hospital for South-East London, Greenwich-road, S.E.—H.S. £125.
National Hospital, Queen-square, W.C.—Hon. Surg. Asst.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Nottingham, City Mental Hospital.—Jun. Asst. M.O. £350.
Nottingham General Hospital.—Res. Cas. O. At rate of £200.
Nottinghamshire County Council and Mansfield Woodhouse Urban District Council.—Joint M.O. £700.
Portsmouth, Royal Portsmouth Hospital.—Sen. H.S., also Cas. O. At rate of £200 and £100 respectively.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal Army Medical Corps.—Commissions.
Royal College of Surgeons of England.—Election to Court of Examiner, also Election of Examiner in Dental Surgery.
Royal Manchester Children's Hospital, Pendlebury, nr. Manchester. Res. M.O. At rate of £125.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. £130.
St. Leonards-on-Sea, Buchanan Hospital.—H.S. £150.
St. Mark's Hospital for Cancer, &c., City-road, E.C.—Res. Surg. O. At rate of £150.
St. Mary's Hospital Institute of Pathology and Research, Paddington, W.—Research Studentship. At rate of £200.
St. Mary's Hospital, W.—Dental Surgeon.
St. Pancras School for Mothers, Ampthill-square, N.W.—M.O. 1½ gns. per consultation.
Sheffield, Crimicar Lane Sanatorium.—Asst. Tuberculosis Officer. £450.
Stoke-on-Trent, Longton Hospital.—H.S. £120.
Taunton, Taunton and Somerset Hospital.—Sen. and Jun. House M.O.'s. At rate of £150 and £100 respectively.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. Both at rate of £100.
Wallasey, Victoria Central Hospital.—Jun. H.S. At rate of £100.
West Kent Joint Hospital Board (Infectious Hospitals).—R.M.O. £400 per annum.
West London Hospital, Hammersmith-road, W.—Res. Asst. Surg. £200.
Westminster Hospital Medical School, S.W.—Hon. Lecturer on Tropical Diseases.
Wrexham and East Denbighshire War Memorial Hospital.—Two Res. H.S.'s. Each at rate of £100.

Births, Marriages, and Deaths.

BIRTHS.

BISHOP.—On June 28th, at Perryn-road, Acton, W., the wife of Dr. P. F. Bishop, of a son.

CADE.—On June 28th, at Harley-street, W., the wife of Stanford Cade, F.R.C.S., of a daughter.

DONALD.—On June 25th, at a nursing home, Kensington, the wife of Charles Donald, F.R.C.S., of a son.

HUTCHINSON.—On June 29th, at Edwardes-terrace, Kensington, W., the wife of Samuel Hutchinson, M.R.C.S., of a daughter.

MOORE.—On June 28th, the wife of David L. H. Moore, M.B., of a daughter.

STANLEY.—On June 23rd, at rue des Belles Feuilles, Paris, the wife of E. Gerald Stanley, M.D., M.S., F.R.C.S., of a daughter.

MARRIAGES.

EDWARDS—SIMCOCK.—On June 27th, at St. Paul's Church, Heaton Moor, Manchester, Norman L. Edwards, M.B., F.R.C.S., to Margaret Simcock, M.B., eldest daughter of Dr. and Mrs. James Simcock, of Heaton Moor.

STEELE—THOMPSON.—On June 28th, at All Saints', Foots Cray, Kent, Tom Barton Steele, L.D.S. R.C.S. Eng., of Thorneycroft, Christchurch-road, Bournemouth, to Christine Lucy Winifred, only daughter of the late Richard Hanan Thompson, of Fairlight, Chislehurst, and the late Mrs. Thompson, of Upmeads, Dunbar-road, Bournemouth.

DEATHS.

CHETWOOD.—On June 28th, at Christopher-street, E.C., William Chetwood, M.R.C.S., L.R.C.P., aged 82 years.

CROOKSHANK.—On July 1st, suddenly, at Ridge Hill Manor, East Grinstead, Edgar March Crookshank, J.P., M.B., in his 70th year.

HEPWORTH.—On May 20th, at Camberwell, Victoria, Australia, Archibald Francklin Hepworth, L.R.C.P. & S.Edin., aged 61.

READE.—On June 30th, in London, Lt.-Col. William Lloyd Reade, R.A.M.C., aged 70 years.

THISTLE.—On June 26th, at Torquay, Frederick Thomas Thistle, M.D.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

HELPERS IN HYGIENE.*

BY ANDREW BALFOUR, C.B., C.M.G., M.D. EDIN.,
DIRECTOR, LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

THE remarkable changes which the last 25 years have witnessed would have heartened one keen helper in hygiene, the late Sir Benjamin Ward Richardson, a Victorian pioneer and somewhat of a seer in his day. He was the author of a notable book entitled "The Health of Nations," which all those interested in the history of hygienic endeavour should study but, for my present purpose, I would rather cite a passage in his "Vita Medica," that autobiography which he completed in 1896, two hours before he was seized with fatal illness. He has therein a chapter entitled "Efforts towards the Extinction of Disease," where he says: "The best idea, therefore, is that the disturbance or catastrophe called disease—excluding accidents—is not simply to be met by treatment, although that may be necessary and beneficial, but is to be prevented, and that with so much perfection that it shall altogether become extinct, or remain as a mere historical ghost."

Another prophet, though possibly a somewhat optimistic one, who happily is still with us, was the distinguished zoologist, Sir Ray Lankester, when he wrote, a good many years ago, that if we could only apply our present knowledge properly all communicable disease could be stamped out in the short course of 50 years.

Now neither of these men, shrewd, scientific, and well-informed, would have ventured to make such statements unless he had good reason for believing them to be true. They *had* good reason for, within the life-time of each, a veritable revolution had been wrought in our knowledge of the causes and spread of those diseases which can be transmitted from man to man or from some lower animal to man, with or without the aid of an intermediary, in other words, indirectly or directly.

Early Helpers.

It is sometimes forgotten, however, that long before Pasteur revealed the world of microbes and Manson showed how insects play a part in the spread of disease, many helpers in hygiene, by careful observation and sound reasoning, had reached conclusions which, when they translated them into action, yielded very gratifying results. True these men worked in the dark, but they did get hold of some essential facts and so, long before anything was known about the rôle of lice in typhus fever, Lind, the great naval surgeon of the eighteenth century, indicated clearly and correctly what measures would prove effective against that complaint. Similarly, other observers noted the connexion between dirt and diseases of various kinds, notably such intestinal disorders as diarrhœa and dysentery, and preached and practised a hygiene of environment. Long ago in Scotland there was a proverb, "the clartier (that is, the dirtier), the cosier," but the slogan of the health reformers was very rightly "the dirtier, the deadlier," and the deadlier, remember, not only to yourself and your family but to your neighbours and fellow citizens. These early reformers were very largely like voices crying in the wilderness. Few heeded them, save in communities like the Army and Navy where, if the officers commanding were believers, disciplinary measures could be taken, or where pressure could be brought to bear on local authorities and the Government, as when John Howard, shocked and horrified by the condition of the prisons, raised his voice and testified against them.

Mead and Howard, Percival, Ferrier and Currie, the civilians, Lind, Trotter and Blane, the naval surgeons, Pringle, Monro and Jackson, the Army hygienists, lived, laboured, and accomplished much good in a limited way. The country doctor, Jenner, by introducing vaccination, conferred upon suffering humanity one of the greatest boons ever vouchsafed to it and radically altered the situation with respect to small-pox and its victims. It was not, however, until Chadwick, the lawyer, came upon the scene and, with fearless enthusiasm, dogged determination and no little pugnacity, took up the cudgels on behalf of health, that any real and widespread progress was made, apart from what the good Lord Shaftesbury accomplished in the way of factory reform. Then and thereafter, however, a marvellous change ensued, mainly as a result of an organised campaign for cleanliness. What a fight it was,

* An address delivered under the auspices of the Isle of Man Red Cross Society at the conclusion of Health Week, March 4th, 1928. (Abridged.)

against superstitions and vested interests and supineness and bitter opposition! Although it is true that reform was in the air, that it was a period of quickening and advance in several directions, perhaps the battle might never have been successful had not the country been visited periodically by outbreaks of cholera which swept away hundreds. The scared populace was thankful to listen to those who brought a message of hope, more especially when Dr. John Snow showed that cholera was spread by the intestinal discharges of the sick and indicated polluted water as a source of infection. It was, in great measure, fear which made the people of England loosen their purse strings and provide the wherewithal to obtain pure water, clean dwellings, an efficient removal and disposal of filth and refuse, but, to do these Victorians justice, once they realised they were getting value for their money, they gladly bore the burden and so reaped the reward.

There were, however, other directions in which these early helpers of hygiene exhibited activity. The health of the individual was not altogether neglected though it is true that, for the most part, the individual received attention chiefly because he formed part of a community. It was, in other words, communal, rather than personal hygiene to which the earlier workers devoted themselves. Take, for example, Lind's efforts to get scurvy stamped out of the Navy by the issue to the individual sailor of a ration of lemon juice. Consider how the individual slave benefited from certain efforts affecting his personal welfare, made by Wilberforce and others in their campaign against the appalling conditions of the trade in black ivory.

Until quite recently I fancy that few had any idea that some of the recent developments on which we pride ourselves had their counterparts long ago. Dr. Mabel Buer, of Reading University, has unearthed some interesting facts which show that considerable attention was paid to infant and child welfare in the latter part of the eighteenth and the beginning of the nineteenth century. There was actually a baby clinic in London in 1815, the year of Waterloo.

Now, whence came these more enlightened ideas on the saving of young lives? From a study of the ancient Greeks, that nation of heroes, athletes, and philosophers who certainly were well versed in all matters relating to bodily health? It is unlikely. From the ancient Romans, that race which performed remarkable feats in sanitary engineering and had inherited some of the hygienic wisdom of the Greeks? It is improbable, for the Romans appear to have had little thought for child life.

John Peter Frank.

I cannot help wondering if it was not a legacy from a very remarkable man, a great helper in hygiene, and indeed not only a helper but a leader. So far as I can discover, his name and fame have in this country been wholly forgotten, though upon the Continent, where he lived and worked, they are remembered and they are known also to certain American hygienists. Perhaps in England there has been too great a tendency in matters hygienic to say we are, or were, the people and wisdom remains with us. In other words, knowing that England led the way in public health legislation, English students of the subject are a little apt to imagine that modern hygiene originated in this country and are not disposed to look abroad and see what other nations had done in pre-Chadwickian days. It is true that the English, first of all peoples, placed hygiene on a sound basis, established a definite system of organised sanitary control and enlisted the power of the law in regulating and enforcing public health procedure. Let us, however, remember that when England was sunk in dirt and squalor the cleanliness of the Dutch was proverbial: and let us pay homage to the memory of that leader of whom I spoke, who was no other than John Peter Frank.

His name will not be found in the Encyclopædia Britannica, though quite a respectable space is devoted to another Frank, one Jakob who, of all things on earth, was a Jewish theologian. Yet our Frank was once a name with which to conjure and Napoleon, no mean hygienist himself, tried in vain to obtain his services. He was born at Rotalben, in Bavaria, in 1745, the year before Culloden, when the death-rate in London was 50 per 1000—in 1926 it was 11·6—and life had an uncertainty about it to which it is now a stranger save in the matter of motor vehicles. His father was French. After studying at Heidelberg, Metz, and Strassburg, he gravitated to Göttingen and then to Pavia, eventually becoming Director-General for Sanitation in Lombardy somewhere about 1786. Think of that! In 1795 he was called to Vienna by the Emperor of Austria as consultant for the health of the troops. Thereafter we find him as a Professor at Vilna, then at St. Peterburg, and finally back again in Vienna, where he died, full of years and honours, in 1821.

He must have been a man of courage and humour. When he lay dying there were eight eminent doctors round his bed who had been summoned to attend him. He smiled and said: "This reminds me of the end of a French soldier wounded by eight musket shots at the battle of Wagram." "Morbleu!" said he, dying, "it takes not less than eight bullets to kill a French grenadier."

Frank was a voluminous writer and covered a wide field, but I mention him here because as a hygienist he was far ahead of his period and because he wrote a truly astonishing book entitled "System einer vollstandigen Medicinischen Polizey." This, the first authoritative work dealing with public hygiene, appeared in successive volumes between the years 1779 and 1817.

It dealt with nearly every aspect of hygienic activity, including what we are pleased to regard as modern developments. The author writes on sexual hygiene and maternity and child welfare. He discourses on the education of children. He considers the value of foundling institutes and orphanages, and looks at schools and gymnasia from the public health standpoint. A volume is devoted to the problems of nutrition; food and drink being considered and the importance of moderation stressed. Housing is discussed and public health conditions generally. The question of cemeteries is not forgotten, and there are disquisitions on the healing art and on schools of medicine. The importance of veterinary knowledge and its relations to medicine receive attention, and altogether it is startling to find how Frank anticipated posterity. I can find no record of his great work being translated into English or even into French, but a treatise which he wrote on the method of rearing healthy children was translated into the latter tongue and hence it is conceivable that it was *his* influence which led to the early movements in infant welfare of which we have spoken. In addition to being a great clinician, a man of affairs and an illustrious hygienist, Frank was a dreamer of dreams. He formed the conception of a State guided by public health considerations, a kind of Utopia wherein Hygeia should reign supreme, and where affairs would be conducted for the true and lasting benefit of mankind. It is not surprising that, with his knowledge and acumen, he should have conceived such an idea when, all around him, he saw the misery and wretchedness produced by successive wars and reflected on the welter of intrigue and politics as well as on the endeavours of the proletariat to obtain a place in the sun. Remember, he lived through the days of the French Revolution when, with much that was vile and repellent, there were the germs of great things and indeed in some ways the beginnings of a new world.

Reforms in England.

Whatever may have been Frank's influence on England, there can be no doubt he left his mark on the State medicine of Germany, Scandinavia, and Russia, but he lived, for the most part, in troublous times, and even after his death the Continental nations had not the means to put his precepts generally into practice. The man who followed him was Max von Pettenkofer, but we need not consider his exploits as a helper in hygiene. Rather let us skip the intervening years, including those when Sir John Simon as Dr. Simon and central medical officer to the General Board of Health, was making history, ably assisted by Southwood Smith and others, albeit remembering that Lecky has penned a noble epitaph for these stirring and fruitful times. He wrote: "The great work of sanitary reforms has been, perhaps, the noblest legislative achievement of our age, and if, measured by the suffering it has diminished, has probably done far more for the real happiness of mankind than all the many questions that make and unmake ministries." Its history is set forth in Simon's classic "English Sanitary Institutions." The fight was won but the position had to be maintained; and, furthermore, it soon became evident that the victory, though great, was not complete. In addition it came gradually to be recognised, as Frank had long before envisaged, that new methods of warfare had to be adopted. Let us dwell on these matters for a space. To maintain the position an adequate health organisation was required; and that is why England and Wales have now a Health Ministry, advised by a chief medical officer. Its medical department has separate sections dealing respectively with general health and epidemiology; maternity and child welfare, in which section very fittingly a woman is senior medical officer and the medical officers and inspectors are all women; tuberculosis and venereal disease; the supervision of food-supplies; general practitioner services; sanitary administration in relation to infectious diseases; and Welsh Board of Health to deal with the public health interests of the Principality.

The Work of Public Authorities.

I will comment on some of these immediately. Meanwhile, let us continue the tale and note that other central departments of Government have important health interests and so are helpers in hygiene. The Board of Education with all its responsibilities for the health of school-children and the sanitary condition of schools, the Home Office with

its control of the health conditions in factories, mines, and workshops are appropriate examples.

The duties of the medical department of the Health Ministry are, speaking broadly, advisory and supervisory and cover a wide range which you will find listed in that masterly memorandum written by Sir George Newman and entitled "An Outline of the Practice of Preventive Medicine." Every community intent on hygienic progress and, more especially, every backward community striving to amend its ways, should be familiar with its pages. Perhaps the type of the Ministry's activities which will appeal most strongly to an audience of this kind is that whereby an expert is sent from the Ministry to assist the local health officer of a district where either some obscure infectious disease has made its appearance or where some communicable disorder is prevailing as an epidemic and has not yielded to ordinary measures. Medical officers of health greatly appreciate such skilled help, which is also naturally of very definite benefit to the local community and sometimes to the country as a whole. The official local helpers in hygiene are the councils of the areas into which the country is divided. These are the county councils. There is, as you know, a County of London and that county, small in area but packed with people, has its Council, and the Council has its medical and health organisation, a large and most important department charged with most onerous duties.

Outside London the work of the county councils is reinforced by that of the local sanitary authorities, be they urban, rural, or port. There are three types of urban local authorities—namely, the county boroughs, the municipal boroughs, and the urban districts—all acting through their respective councils. The county boroughs are represented by big towns, each with more than 50,000 people; the municipal boroughs are, as a rule, smaller towns; the urban districts, as the name implies, are also townships, and may indeed be very large and important places which happen never to have had conferred upon them by Parliament the title of county boroughs. As a type take Gosport, with its 33,000 people. The rural authorities are the councils of rural districts, which vary a good deal but which all answer to the description of country districts with comparatively small and scattered populations. In these districts, however, there may be small towns or clusters of villages. The state of matters as regards ports varies in different places and may be distinctly specialised. Great ports like London and Liverpool, for example, are under different guidance and control in health matters to the cities whose names they bear.

The Rank and File.

Now the councils of the above-mentioned boroughs and districts are concerned with various aspects of local government—not only with health work—and so, as a rule, at least in places of any size, the care of the people's health is entrusted to a public health committee. Such committees consist for the most part of laymen, and hence must have executive and advisory officers who are experts. These experts are the medical officers of health and in all important places, and I think I may say in all progressive and thoroughly up-to-date places, the medical officers of health are full-time officials. Here, in the great towns, the lesser towns, the villages, the countryside, we find what Newman calls the fighting-line of the never-ending, though usually unobstrusive campaign against inefficiency, disease and death. The medical officers of health and those who assist them and work with them, the sanitary inspectors, health visitors, and nurses, are, like Uriah the Hittite, in the forefront of the battle. So, too, are the executive officers of port health authorities. It is these men and women who are actually up against the forces of death, and remember that under the banner of the arch-destroyer there marches a multitude of legionaries, communicable and non-communicable diseases, ignorance, poverty, vice, drink, gluttony, greed, spite, selfishness, and so forth; it is these workers, the majority, capable and devoted, who are the greatest helpers in hygiene. They are the greatest in the sense that the private soldier, to whom Lord Haig paid tribute, is the greatest fighter. But for their numbers, skill, energy, patience, staunchness and devotion to duty, there would be another tale to tell from that which is told in the columns and obituary notices of the newspapers, in the medical press, and in the reports of the Health Ministry and of the Registrar-General. The commander-in-chief and his staff may plan a campaign. They cannot win it save through the deeds of the rank and file.

What are these deeds in the health campaign? It would take a long time to enumerate them in full, but from what has already been said you have no doubt gathered, if you knew it not previously, that they fall into two chief groups which we may conveniently term environmental and personal. The former are those which the pioneers in this country chiefly practised when they fought and won under the war cry—"Sanitas, sanitatis, omnia sanitas"; the latter embrace the principles which the far-sighted genius of Frank perceived to be essential and others which he did not visualise but which have established themselves throughout the fruitful years when the public health pendulum swung from the old order of things to the new.

The Menace of Dirt.

And here let me remark that, although it cannot be said to have swung too far, for the hygiene of the individual is of paramount importance, yet interest in the new has, I fear, led to some neglect of the old. How otherwise can one explain the filthy condition of some of our streets and highways, the shocking manner in which much of our food is handled, the refuse dumps one encounters in rural areas, foul blots upon fair scenes? It is true protests are raised but the faults continue, while one can imagine that in earlier days, say about 1860, the fervour of the reformers would have swept them away. Let us strive to preserve a balance and, in pursuit of new triumphs, not permit that insidious enemy, dirt, to regain positions from which he has been ousted. Even when dirt does not spell disease it leads to a lowering of tone, to a lack of self-respect, to a slackening of fibre. The trouble is partly due to the fact that much of the sanitation which formerly very closely concerned the medical officer of health has been relegated to other control. In the earlier days he had to fight like the devil, or shall we say like a good angel, to secure pure and sufficient water supplies, to get sewerage systems established, to ensure the healthiness of dwellings. Nowadays, for order has long since succeeded chaos, water supplies, sewerage and sewage works, house drainage and so forth are in the hands of competent engineers. Minor engineering and house sanitation are looked after by well-trained and certificated sanitary inspectors. Good and well, but from what I hear and what I see, I believe it would be an advantage if our medical officers of health had a little more time to keep in personal touch with these matters. This, I believe, is even more true in the case of the removal of nuisances and of refuse, one of the chief environmental duties in the olden days and still in tropical countries a most essential part of the health officer's routine.

As of yore the other environmental deeds comprise action relating to housing and town-planning, smoke prevention, the inspection of food, the control of infectious diseases, and inquiries into offensive trades. I cannot list them all but, with the exception of the control of infectious diseases, they have slipped a little into the background, for a multitude of activities relating to the hygiene of the individual now falls to the lot of the medical officer of health and certain of his assistants. In the matter of practical application these new duties are a product of this century and comprise maternity and child welfare work, the special and intensive control of tuberculosis, and the venereal diseases from the standpoint of the infected individual, the care of the health of the school child, the care of the blind, and occasional duties arising out of the National Health Insurance Act.

Formerly the great idea was to stamp out disease, especially communicable disease. That great idea persists, but along with it there is now the conception of rearing a sound and healthy race from the start, of extending the campaign to diseases called non-communicable, like rheumatism, rickets, and cancer, and even to minor maladies such as dental caries, oral sepsis, discharging ears, habitual constipation, the common but crippling cold, and the dyspepsias which cause so much chronic ill-health and lead to so much inefficiency. There is a move also towards investigating and dealing with worm infestations, which in the past have been somewhat neglected. Lastly, public education in hygiene has become a feature of the new campaign.

Innumerable Helpers.

Enough has been said to indicate that hygiene in this country must now be spelt with a very large H, and it must be evident that the health organisation is complicated, as indeed it could scarcely fail to be, considering its origin, the way it developed, the fact that, over a long period of years, there have been shifts and adaptations and modifications, the manner in which new legislation has been grafted upon old, the necessity for conforming to altered conditions of life. Some of the helpers have been mentioned, but there are many others. The school teacher inculcating simple rules of health helps the cause, so does the wise parent, so does the child who puts precepts into practice. The schools of medicine help and will help more when they adopt as the chief object of their training the permeation of the medical curriculum with the preventive idea. Specialist medical officers help, like those in charge of tuberculosis and venereal disease clinics. In this category comes also the school medical officer and, despite all that is urged against him and his doings, the public vaccinator. The medical practitioner helps and his help will increase in value when he coöperates to a greater extent than at present with the officers of the Public Health Service and if and when the

idea of periodical health examinations takes root. The medical press helps and it is gratifying to note how much attention it now pays to the preventive side of medicine. Veterinarians help by dealing with tuberculous milk cows and stamping out diseases of animals transmissible to man. Employers of labour help when they make provision for the welfare of their staffs and employees. The tradesman helps when by his cleanly methods he handles human food in a way to command respect and confidence. I always take my hat off to the maiden in the sweetstuff shop who uses a scoop instead of her hand, be the latter never so dainty.

Those engaged in research help as, for instance, the great army of workers under the aegis of the Medical Research Council and those engaged in many scientific institutions upon problems affecting every branch of hygiene. There are many voluntary agencies, like the League of Red Cross Societies, which help, some more wisely than others, but all in some degree so that we recall an old proverb of Portugal which says: "One grain fills not a sack but helps his fellow." The lay press helps often very greatly; occasionally, perhaps, not to the best advantage, but with opportunities vouchsafed to few of those who aid the cause. Its influence in the past has been widespread and in the future will become more effective when those best fitted to advise the public can make use of its columns for propaganda purposes. The Church helps in various ways and might help more if it recognised to a greater extent that sick bodies are specially apt to be tenanted by sick souls and that there is something to be said for giving bodily and mental hygiene a first innings in any attempt to elevate the masses and improve moral tone. The Law helps, though it is better not to invoke its aid and to try what persuasion and education can do in the first instance.

But the lesson to-day is that everyone can help. There is no mystery about the business. Once a few essential facts are mastered simple rules of health can be adopted and practised by any person of average intelligence. A vast deal of public health practice is common sense applied to every-day affairs. Long ago it was different. A pall of ignorance shrouded the medical faculty and the laity alike. Visitations of disease were supposed to be the outpoured vials of wrath of an outraged deity. Superstition was rampant. Fatalism held sway. The people perished for lack of knowledge. Now all is changed and, though we are still ignorant in certain directions, for example, the causes of influenza, measles, and the so-called "sleepy sickness" still elude us, we have a firm grasp of principles and in large measure are masters of our fate. Who can doubt it? Consider what has happened.

The death-rate of the whole country has fallen to a figure which 50 years ago would have been regarded by many as beyond the dreams of the most optimistic. The infantile mortality has been halved in the course of a generation, the tuberculosis death-rate has steadily declined; some diseases have become extinct, others nearly so. The expectation of life, that is, the number of years a person may expect to live from the time of birth, has greatly increased —i.e., from about 45 in 1900 to 55 to-day. In the U.S.A. it is 58, in New Zealand 62. In British India, a land where hygiene has as yet made little progress, it is only 23. What we now have to fight is not so much death as damage. Life has not only become safer but infinitely more confortable, though there is still great need for improvement.

Monetary Value of Human Life.

The facts are convincing but these kinds of facts do not always appeal to the multitude and, in any case, there are many people, who, quite rightly, always consider the cost, their motto being, "Is the game worth the candle?" and their candle meaning hard cash. Not only so, but perhaps because there was some truth in Napoleon's sneer about a nation of shopkeepers not a few folk in Great Britain and, I take it, the Isle of Man, want return for their outlay, if not actually in what used to be called "jingling Geordies," at least in *terms* of guineas or of pounds, shillings, and pence. Both classes may rest satisfied for it is well worth while spending money on health, which is in a high degree a purchasable product, and, moreover, hygiene pays. It is a good and sound investment both for the individual and for the nation. If any sceptics remain, they will naturally say, "Submit your proofs and in plain language which can be understood, not camouflaged by scientific verbiage nor rendered unintelligible by the use of what the Scotch call 'lang-nebbit' words." Well, here they are!—a few of them—there is not time for many though they could easily be multiplied.

First, let us consider the monetary value of human life. What is that enigma, a human being, worth in coin of the realm? Well, his or her value varies according to age. The latest calculations come from America and are, of course, not applicable to this country, especially as they are based on earning capacity. However, it is interesting to consider them. Dublin and Lotka have recently shown that in 1924 the potential value of a male child at birth was no less than £1866 and, what is more, they have demonstrated that since 1901 its value has increased by £356, or nearly 20 per cent., owing to improved conditions.

Woods and Metzger have shown that in 1927 the average per capita value of the population of the United States was £3113. There have been more or less vague guesses on the subject this side of the Atlantic and one feels that Dr. Nankivell, the medical officer of health of Plymouth, was distinctly cautious when he said: "It is not an exaggeration to suppose that a life is worth on an average at least £100 to the community." Working on this modest basis and comparing the Plymouth of to-day with that of 70 years ago, he concludes that the improved health of the city represents a large annual financial saving which for 1926 he estimates at £100,000. "Nothing," he says, "costs the individual ratepayer more than sickness and mortality."

There we have a calculation concerned with all kinds of preventable disease. Let us look at another limited to a single malady but a malady which takes heavy toll and which is one of the "Four Scourges" to which Dr. Fremantle devotes a chapter in his interesting book, "The Health of the Nation." The malady is syphilis, that "hidden hand in pathology," as it has been called, and Colonel Harrison, writing about it in England and Wales, points out that "in 1920 there were reported to the clinics about 42,000 cases. Of these probably 6000 would have died of some sequel of syphilis had it not been for the treatment afforded by the free clinics." He assumes that the value of a man's life is £60, which he admits is a very low figure considering that the deaths would have occurred in persons at the most productive period of life. As a matter of fact, £500 would have been nearer the mark, and, as we have seen, in the United States an infinitely larger figure would be quoted. However, if we put it at £60 the loss would have been £360,000 by 1927. This represents only the saving of life. The average patient prior to death is ill for about three years. Hence the system of free treatment, a great ally of hygiene, by which many thousands of people are prevented from becoming burdens on the community at a time of life when they should be national assets, must be of immense value to the nation.

Take another disease—small-pox—which in a mild form we now permit to run riot in certain parts of England. Dr. D. Rocyn-Jones, the county medical officer of Monmouthshire, estimated that the recent small-pox outbreak there had cost the rate-payers £10,000 in capital expenditure and equipment, while the maintenance of 200 beds for six months means another £13,000. That is a pretty state of things brought about by the neglect of a measure the value of which in preventing small-pox has been abundantly proved and proved up to the hilt.

Health and Industry.

Sickness in relation to its cost in industry formed the title of an interesting paper by G. F. McArthur, the chief lady welfare superintendent of the London Midland and Scottish Railway Company. She quotes statistics issued by the Ministry of Health to show that, in 1926, there were 15,000,000 cases of individual sickness drawing benefits under the National Health Insurance Act, and that 27,000,000 weeks of working time were lost owing to illness, much of it, remember, if not most of it, preventable. The loss of wages to the workers is estimated roughly at a minimum of £30,000,000 and this means a corresponding loss to the nation in spending power. There remains the loss to production faintly reflected, as she puts it, in the 27,000,000 weeks of lost working time. Approximate though they admittedly are, these figures are probably under than above the mark and they should give one furiously to think. It must be clear that money spent in diminishing this drain is money well spent, and, as a matter of fact, a comparatively small expenditure will bring about a great reward and in two directions. As McArthur well says: "If every industry would examine its sickness costs with the same thoroughness as it examines its manufacturing costs, and with the same motive of reduction, the result would not only be to bring down the premium of the health insurance societies but to bring 'peace in industry' many milestones nearer its longed-for fulfilment." Prof. E. L. Collis, quoted by Dr. Deardon, is even more emphatic on the "savings" question. He considers that medical science properly applied to British industry would result in an annual saving in labour turnover of from £60,000,000 to £70,000,000, in lost time of £50,000,000 to £60,000,000, in industrial convalescence of many millions more, and that to assess the total saving at £140,000,000 a a year would be quite reasonable and well within the range of possibilities. Lastly, for figures are apt to become wearisome, let me refer to an act of great significance. Insurance companies know the value of money and are careful about their investments. The American has never been accused of lack of appreciation of the dollar. Yet we find an American company, the Metropolitan Life Insurance,

generously supporting public health work in Canada and the United States. Why? Because it is good business.

There is another aspect to this financial question which strengthens the argument that hygienic measures pay. In the absence of adequate preventive measures employers of labour may have to compensate their workpeople. Not very long ago, the widow of a coal-miner in Scotland obtained compensation because it was shown that her husband had died of a disease called infectious jaundice and that he had become infected in the pit from a rat or rats harbouring the parasite of that disease.

Sound Investments.

With all these facts and figures before us what are the investments which can safely be recommended to the inhabitants of this island? From a study of statistics and from information kindly supplied, it is clear that antituberculosis gilt-edged stock, if it can be secured, would yield good returns. Well, it can be got if, at the same time, we take some ordinary temperance, I do not say teetotal, shares and secure also some housing debentures. I call these debentures because money put into good houses and devoted to lessening overcrowding may well result in a repayment of principal in addition to interest. Segregation cumulative preference shares may be commended. In other words, put money into an hospital where cases of communicable disease can be received and the danger of spread of infection thereby lessened. Little or no result may be seen in one year but the time will come when this investment will prove a boon and a blessing. Milk bonds are indicated, for there is much need for the consumption of more milk and such milk should be pure and cheap. Douglas has already put money into what we may call ordinary water shares with the ordinary result, which at one time would have been looked upon as extraordinary, that typhoid fever has been abolished in the town. It still, however, lingers in the other districts and so antityphoid stock is indicated for purchase. It is, as has been hinted, of different kinds. Finally, funds may well be devoted to obtaining education trustee securities, another gilt-edged stock. Making ourselves trustees for public health propaganda we can put money into this type of investment without being liable for depreciation. In any case, there should be no depreciation, nor should any of these ventures fail. The Isle of Man is favoured in many ways. It is comparatively isolated during part of the year, and isolation in health matters has its advantages. Its climate has much to commend it. It enjoys a fair measure of prosperity and yet is free from the graver industrial problems. It is interested economically in keeping healthy, for it derives much of its revenue from its visitors, and typhoid and tourists are incompatible. Its death-rate, 14·6 per 1000 in 1926, is a fairly respectable figure and is less than its birth-rate. Its infantile mortality-rate is not very high and is improving. Altogether it would appear as if the Isle of Man, starting, it is hoped, on a new race for health, has an excellent handicap. There really seems no reason why it should not achieve a record. It would be a proud boast in years to come if this little island could wrest the laurel wreath from another island, from New Zealand, which has already achieved several records and is all out to make others. It is worth trying, for everyone benefits in the process except perhaps undertakers, sextons, and the proprietors of cemeteries and crematoria, and, after all, these good folk can never be quite ruined, for all must, in the long run, die. The great thing, however, is to die as we are meant to die, peacefully at a good old age, and to live as we are meant to live, healthily with sound minds in sound bodies.

ASSESSMENT OF RATES ON HOSPITAL BUILDINGS.

A MEETING was held at Brighton on June 26th to consider the position of charitable bodies under the new assessment of rates in the borough brought about by the Rating and Valuation Act, 1925. Mr. A. F. Graves, who has for many years been connected with a number of Brighton institutions, expressed the opinion that the assessments which the corporation valuer had arrived at were far too high. The institutions had, since 1875, been assessed at nominal figures, but the valuer had now assessed them at what he considered to be their true value, and no one, except Parliament, could alter those arrangements. Unfortunately, Mr. Graves said, the corporation had brought the Act into operation earlier than any other corporation in England, and that made it extraordinarily difficult to ascertain how charities were being treated elsewhere.

Mr. Graves had attempted to ascertain the position of institutions in other towns of about the same size as Brighton. At Burnley the hospitals were not assessed at their full value; in Sheffield special consideration was given them, the assessment working out at £1 per bed. In Birmingham and Portsmouth the cases were dealt with on their merits; and in Leeds the institutions were not assessed at their full rack rental, some concession being made. Mr. Graves contrasted the case of the Sheffield hospitals, rated at £1 per bed, with the position of the Royal Alexandra Hospital for Sick Children at Brighton, the new assessment of which worked out at £14 per bed. Even London hospitals, occupying sites the rental value of which must be enormous, were only assessed at £4 per bed. Mr. Graves instanced three examples of the effect of the new assessment at Brighton. The Royal Sussex County, which formerly paid £100 a year, was faced with a demand for £1600 a year in rates; the Children's Hospital demand had jumped from £16 to £500; and the Eye Hospital had gone up to £100 from its former figure of £17. As to the Children's Hospital, the amount to be paid in rates would practically absorb the whole of its income from subscriptions. It was impossible for the hospitals to raise the extra money to meet the extra demand. If the position was not cleared, hospitals and institutions would not be able to build an addition to their buildings, because they would be rated on them at the higher rate.

A resolution was carried requesting the borough Members of Parliament to take steps to secure the passing of a short Act of Parliament, or such other measures, for relieving hospitals and other charities of the liability for paying rates under the assessments being placed on charitable institutions under the Rating and Valuation Act, 1925, and that the Town Council be requested to receive a deputation from that meeting to discuss the effect of the new assessments upon local charities.

A BRUTAL SCHOOLMASTER.[1]

AN English translation by Mr. Cyrus Brooks, of the well-known German novel, "Die Ursache," explains fully the popularity of the original and justifies the reputation of the author. The story is simple, terrible, and, which is not the case as a rule with terrible stories, perfectly coherent. A young poet and journalist, who has suffered greatly under a brutal schoolmaster, on visiting his old school, finds the pedagogue maltreating a pupil with similar callousness. Accordingly he kills him, on impulse, and attempts, in defending himself on the charge of murder, to explain the excellent social motives which had led to the crime. Unfortunately he had taken a bank-note belonging to the victim in order to make good his escape, and so comprehensible a reason for the crime neutralises a defence which otherwise might have been regarded as a plea of lunacy. One juryman only inclines towards leniency, recognising something of the murderer's mental state. In describing the last hours and execution of the wretched convict, no details are omitted that might add to the horror of the situation. As a study in psychiatry (perhaps) and as an example of the literature of the terrible (certainly) the book is worth reading. The point of view of the criminal is, presumably, that his crime was justified, or had followed necessarily upon the resuscitated experiences of childhood; the jury only saw in it an ordinary case of theft with murderous violence. The verdict of an ordinary jury was inevitable, even though the mentality of the poet was misunderstood; a jury of psychologists might have been willing to substitute life-long confinement for the death sentence.

HOSPITALS FOR MIDDLE CLASSES: AN APPEAL.

AT the recent conference of the British Hospitals Association, Sir Thomas Horder referred to the need for some alternative to the private nursing home for patients of limited means. The administrator of St. Andrew's Hospital, Dollis Hill, Mr. W. E. Carton de Wiart, points out to us that a beginning in this direction was made as far back as 1913, when the institution over which he watches was opened for the reception of patients, who, while not suitable subjects for free treatment in charitable institutions, were yet unable to meet the charges necessary to secure adequate medical or surgical treatment in private nursing homes. This institution, which depends for its maintenance upon voluntary contributions and patients' payments, stands in its own grounds of 17 acres and is equipped with all modern requirements, while patients are admitted only on the recommendation of their medical adviser; there are no restrictions either as to nationality or creed. As the hospital is now well known, its accommodation of 52 beds is, of course, taxed beyond its limits, and there is urgent need for increasing the number of beds, and for the provision of a children's ward. The domestic provision for the staff, already inadequate, would become more so as a result of the enlargements. The improvements urgently needed are estimated to cost £30,000, and towards this sum £6600 are already available, and builders' plans have been prepared. If the necessary financial help were forthcoming, extension operations could proceed at once. Full particulars will be supplied on application to the Administrator, who makes out a good case for prompt assistance.

[1] The Cause of the Crime, by Leonhard Frank. London: Peter Davies, Ltd. 1928. Pp. 188. 6s.

Observations
ON
DIVERTICULA OF THE COLON:
A PATHOLOGICAL AND CLINICAL STUDY.

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IN 1858, at a meeting of the Pathological Society of London, Sydney Jones reported the case of a man who had suffered from a fistulous communication between the bladder and the bowel, secondary to an inflamed and ulcerated diverticulum of the sigmoid flexure. In spite of this striking demonstration, nearly 70 years ago, of the existence of diverticula of the large bowel as distinct entities, and also of their rôle in the production of grave pathological processes, it was not until 1898 that Graser, by emphasising their importance in the production of stenosing types of inflammation simulating carcinoma, caused attention to be seriously focused on them for the first time. Then the contributions of Mayo, Wilson and Giffin, Beer and Brewer in America, and of Moynihan and Telling in England, established diverticulitis as a well-defined clinical entity with definite sequelæ. In spite of the extensive literature which has since grown up around the subject, diverticulitis cannot be said to be a common disease. At the Mayo Clinic, however, such a wealth of clinical and pathological material bearing on this subject has been available that a study of the disease from all aspects has been rendered possible. Especially has one been able to collect data with reference to the frequency of occurrence of diverticula of the lower bowel, the frequency and character of the pathological changes which may be superadded, as well as to those measures which have been found most successful in the treatment of the latter. The material has been gathered from the post-mortem room, and from the operating room were obtained resected specimens from cases of surgical diverticulitis. For clinical data, the records of cases occurring at the Mayo Clinic during the last 15 years have been consulted.

Incidence and Distribution.

The most recent radiological records of the incidence of diverticula are those by Spriggs and Larimore. In a series of 1000 radiological examinations of the colon Spriggs found diverticula in 10 per cent. Larimore found diverticula in 1·24 per cent. of 4406 cases. At the Mayo Clinic, in 1925, diverticula were found in 5 per cent. of cases in a series of 4484 radiological examinations of the colon. From April 1st, 1923, to April 1st, 1924, in 498 necropsies at the Clinic (excluding partial necropsies and necropsies on still-born children), diverticula were found in 34 cases (about 7 per cent.). All but two of the patients in this series were over 45 years of age. Making the necessary corrections, one could say that roughly 13 per cent., or one person in eight over the age of 45, showed diverticular formation in the large bowel. It was found almost twice as often in men as in women, although there was no marked preponderance of males over females in the total series studied.

In 53 specimens examined, diverticula were confined to the sigmoid flexure alone in 22 cases (40 per cent.). They were scattered throughout the entire colon in 16 cases (30 per cent.). Rarely the cæcum, ascending colon, splenic flexure, and upper rectum were each involved, alone or with the sigmoid. The point to be emphasised is that the sigmoid is involved in between 70 and 80 per cent. of the total number of cases showing diverticular formation; these findings correspond closely with those determined by X ray examination. Moynihan stresses the appendix as a very common site; this was not borne out in the post mortem series examined.

MACROSCOPIC APPEARANCE.

Diverticula in the large bowel vary from almost microscopic dimensions to about 2 cm. in diameter. They have been seen as large as 4 cm. in diameter, but this is exceptional, and there appears to be definite limitation to their capacity for growth and development.

In situ they are almost completely concealed from view because of their tendency to occur in that part of the intestine that is heavily laden with fat. The increase of the subserous fat and the coalescence of the appendices epiploicæ may cause a distinctive tuberous appearance of the bowel. When the fat is stripped, the diverticula are

FIG. 1.

Multiple diverticula of the sigmoid flexure. The fat of the epiploic appendages has been removed to demonstrate the sac more clearly. Relationship to the longitudinal muscle bands and disposition roughly in two rows may be noted.

seen typically as bluish-black flask-shaped or pyriform out-pouchings, set roughly in two parallel rows. This colour is distinctive of the so-called false diverticulum, in which mucosa and submucosa are herniated through the muscular coat. At the base or neck, the muscularis passes up for a short distance on the wall of the diverticulum, forming a narrow whitish strip or collar which is easily distinguished from the bluish fundus or cupola beyond. Only about 75 per cent. of the cases examined, however, showed increase in the subserous fat and in the size of the appendices epiploicæ. In the remainder, where there was no such increase, the patients were either old or had died from malignant disease in which cachexia was prominent. In one or two instances the fatty increase appeared to be strictly localised to the site of the diverticula. This may be explained partly by the tendency of diverticula to extend into and expand the appendices epiploicæ.

The bluish-black appearance of false diverticula is dependent on the presence of fæcal matter within the lumen. Fæcoliths, however, are not invariably found, even in sigmoid diverticula, although spasticity in this area, coupled with the inspissated nature of the intestinal contents, certainly makes them common. Small diverticula with wide mouths, occurring in the non-spastic bowel, often contain no fæcal matter at the time of examination, and are pale and collapsed. Viewed from the mucosal aspect of the bowel, the appearances depend on the presence of spasticity or rugosity of the mucosa. In about 60 per cent. of the series examined, the mucosa of the sigmoid was thrown into rugæ, running slightly obliquely, and the openings of the diverticula were in the depths of the furrows so formed. In the sigmoid the orifices usually appeared as small slits, elongated in the direction of the rugæ. Where diverticula appeared in a non-spastic gut, the orifices tended to be wider, and the mucosa of the diverticula tended to prolapse slightly into the main lumen of the bowel, so that the orifice appeared as if set on a small papilla.

Even when diverticula are multiple throughout the colon, they are almost invariably scarce in the cæcum and ascending colon. Moreover, they are smaller than diverticula of the sigmoid, for they are not subjected to the stretching dependent on the accumulation of fæcal matter within them. Spasticity in this portion is usually absent, the orifices of the diverticula are wide and generally somewhat raised from the plane of the mucosa of the bowel, producing the papillar appearance. These diverticula are usually empty, and can be readily invaginated into the interior of the bowel. The transverse colon, on the other hand, is often spastic, and the multiple small segmentations into which this portion is thrown by the contraction of the longitudinal tæniæ may give, prima facie, a close mimicry of diverticular formation.

Although diverticula may be numerous in the lower sigmoid, they are rare in the upper rectum, probably owing to the greater thickness of its wall. The rectum was affected in two cases only in the series studied.

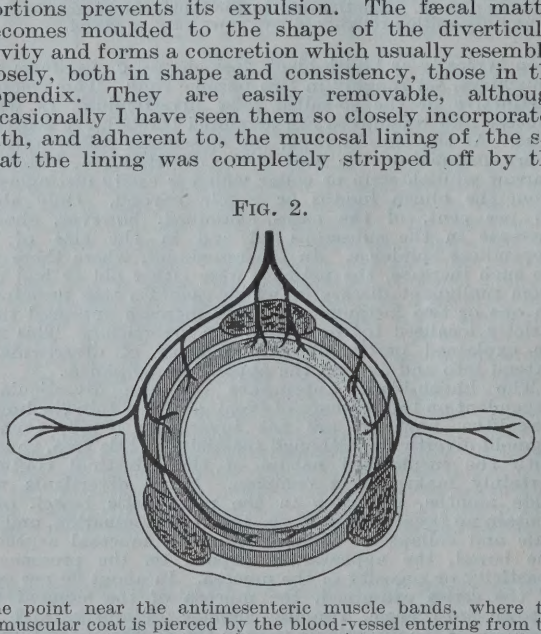
Their Site in Relation to Circumference of the Bowel.

The exact situation of diverticula in relation to the circumference of the bowel is remarkably constant. They appear between the mesocolic and the antimesenteric longitudinal muscle bands, rather closer to the latter than to the former. The diverticula are definitely related to the blood-vessels entering from the mesentery.

It will be seen from Fig. 2 how easy it is for a diverticulum, once it has extended beyond the plane of the muscular coat, to pass into an appendix epiploica. While this is common, it is not invariable. I have never seen diverticula of the large bowel entering between the two leaves of the mesentery as diverticula of the small intestine are so apt to do, and in only one instance have I seen them appearing on the antimesenteric aspect of the bowel between the two antimesenteric muscle bands. When numerous in the sigmoid, however, they may not confine themselves strictly to the vessel points, but, as a result of the generalised weakening of the musculature, they may crop out promiscuously all over the area between the mesocolic and the antimesenteric longitudinal muscle bands. I have seen one instance in which the diverticula were splitting the fibres of the longitudinal muscle band.

The segmental contractions of the bowel force fæcal matter into the diverticula and the narrow orifices, and the lack of muscular coat in the expanded portions prevents its expulsion. The fæcal matter becomes moulded to the shape of the diverticular cavity and forms a concretion which usually resembles closely, both in shape and consistency, those in the appendix. They are easily removable, although occasionally I have seen them so closely incorporated with, and adherent to, the mucosal lining of the sac that the lining was completely stripped off by the

FIG. 2.



The point near the antimesenteric muscle bands, where the muscular coat is pierced by the blood-vessel entering from the mesentery, is an area of lessened resistance, and constitutes the seat of election for diverticula (after Drummond).

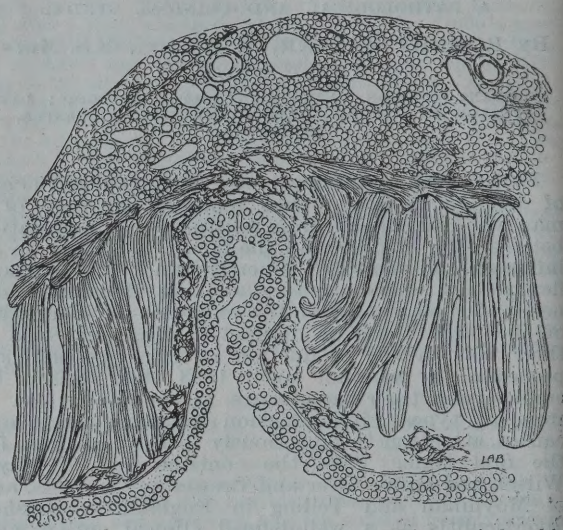
attempt to remove the concretion. Even in the sigmoid, however, the contents of the diverticula are often quite soft, and in the remaining portion of the large intestine, particularly the ascending and transverse colon, the diverticula are often empty, or are filled with soft fæcal matter. This, of course, is due largely to the well-established physiological fact that, generally speaking, the contents of the right half of the colon are fluid and of the left half solid.

Development and Microscopic Anatomy of Diverticula.

Diverticula first appear as little pits in the mucosa. Mucosa and submucosa then extend up through the circular muscle coat, and in the earliest stages may look like exaggerated spasticity of the bowel.

Arriving at the longitudinal muscle coat, the growing diverticulum, either breaks through this or carries it in front of it. In Fig. 3, both circular and longitudinal coats have given way, and the outpouching is ready to extend beyond the plane of the bowel as a so-called "false"

FIG. 3.



Camera lucida drawing of a diverticulum. The sac is breaking through the longitudinal muscle coat.

diverticulum. In other cases the longitudinal coat, although thin, appears to remain intact for a considerable time, but ultimately undergoes pressure atrophy from the continued growth of the diverticulum. In Fig. 4, for instance, muscular fibres can be traced along the wall of the diverticulum for at least half the distance towards the fundus. Beyond this Van Gieson's stain demonstrated considerably fragmented muscle-fibres around the fundus of the saccule, gradually being replaced by fibrous connective tissue. The ultimate outcome, in most cases, is a diverticulum of the "false" type, lacking muscular coat.

Fig. 4 is typical of the appearance of the average false diverticulum of the sigmoid. It shows the rather redundant mucosa of the main lumen of the bowel, the narrow neck of the diverticulum where it passes through the muscular coat and where, in the absence of a fæcolith extending to the orifice, the spasticity keeps the opposing walls in contact. Beyond is the pyriform expansion into the appendix epiploica. The mucous lining of the diverticulum is normal.

I believe the final tendency in all diverticula of the large bowel is towards the production of the false type of sac. On the other hand, in a certain proportion of diverticula a muscular coat is retained, and these can be classified as true diverticula. At the same time, it is probable that they are simply stages in the development towards the false type. Again if chronic inflammatory changes develop around diverticula, their further growth tends to be arrested.

ÆTIOLOGY.

The first aspect of the problem to be considered is whether the diverticula are congenital or acquired or whether there are two distinct types. The fact that several cases have been described at early ages favours a congenital basis, and there is also the association, in a proportion of cases, with diverticula elsewhere in the body. In the 53 cases examined post mortem, diverticula of the colon were found associated with diverticula of the duodenum in four cases, with diverticula of the jejunum in two, and with diverticula of the bladder in two. In other words, the coexistence is not common enough to favour a congenital origin. That diverticula of the colon are sometimes congenital must, I think, be admitted, but they are rare. The cases reported by Hartwell and by Fütterer and Mitteldorph are undoubtedly congenital.

Acquired Diverticula.—As a rule, the occurrence of diverticula in middle and later life is overwhelmin

›vidence that they are acquired. The age-incidence n 100 cases of diverticulitis verified by operation is ;hown in Table I. Eighty-five per cent. of the patients

TABLE I.—*Age-incidence in 100 Cases of Diverticulitis.*

Age.	M.	F.	Age.	M.	F
20 to 30 ..	0 ..	1	50 to 60 ..	25 ..	11
30 to 40 ..	6 ..	4	60 to 70 ..	19 ..	5
40 to 50 ..	17 ..	8	70 to 80 ..	3 ..	1

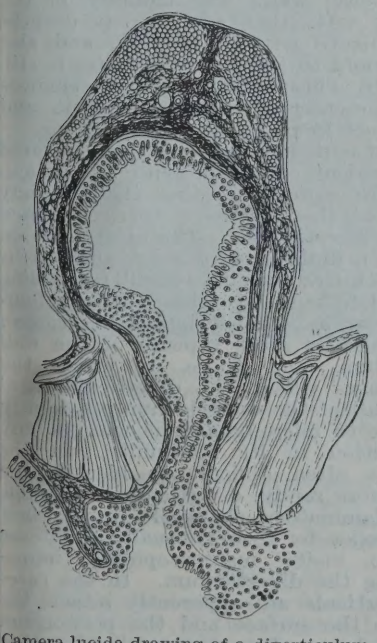
TABLE II.—*Average Weight of Patients in Clinical Series.*

—	Cases.	Av. weight in lb. previous to onset of symptoms.	Av. weight in lb. at time of exam.
Males	55	179	166
Females	20	157	149

n this series were between the ages of 40 and 70, so that apparently diverticula begin to affect persons n middle life, and are especially common in advanced niddle age and old age.

The earlier observers, including Graser and Hansemann, stressed the repeated increases in pressure rom constipation and gaseous distension as being mportant factors in ætiology, but there are many easons for believing that if the wall of the bowel is of normal elasticity there is no apparent distension clinically which will produce diverticula. Again, hough Graser, Hansemann, Hanau, and Klebs concentrated on the vessel points in the bowel wall as constituting the key to the ætiology of liverticula, these vessel points are probably to be egarded more correctly as determining the site of he diverticula than as important ætiological factors in their formation. Most observers have noted the tendency for diverticula to occur in rather obese persons, but the obesity in these cases is most probably the concomitant of middle age and its attendant restricted physical activity, with resultant lowered plane of metabolism and less perfect oxygenation of the tissues. With few exceptions diverticula occur after the age of 40, when the patient is entering on the degenerative period of life. It seems logical enough to assume that the loss of tone and elasticity of muscle which accompanies advancing years is not confined to striated muscle, but affects the unstriped muscle throughout the body, including that of the intestine. Recently Spriggs and Marxer, from a series of excellent radiological studies, suggest that the diverticula may result from a preceding inflammatory process, but in my own pathological studies I was unable to demonstrate this.

FIG. 4.



Camera lucida drawing of a diverticulum passing into the epiploic appendage. Muscle-fibres were demonstrated around the fundus of the diverticulum. A mild degree of subserous fibrosis may be noted.

SECONDARY CHANGES.

The secondary pathological processes superimposed on diverticula may be divided into mechanical and inflammatory.

Mechanical Processes.—Fæcal concretions may produce mechanical irritation of the mucosa of the diverticulum, bringing about a condition favourable to the multiplication of micro-organisms and to their passage beyond the lumen of the diverticulum. Since concretions of considerable hardness are found only in the sigmoid flexure, it follows that for practical purposes inflammatory conditions superimposed on diverticula are confined to this region. The right half of the colon, where the intestinal contents are fluid, is practically immune. However, it is remarkable to what extent the mucosal lining of a diverticulum may be thinned out through pressure atrophy from a concretion and yet inflammatory changes be absent. Fæcal concretions often project slightly into the main lumen of the bowel and the tip may be exposed to pressure from the main bulk of the fæcal mass. Cases of sudden pistol-shot perforation occurring during strain have been described by Murray. In the series of cases at the Mayo Clinic there was no record of such an accident. The presence of foreign bodies other than fæcal concretions has been described by Bland-Sutton. These have been accused of setting up inflammation.

FIG. 5.

Diverticulum in cross section. A collection of lymphocytes, and, incidentally, grades of inflammatory reaction in the subserous coat may be noted.

Inflammatory Changes in Diverticula.—Theoretically, one would consider the diverticulum with its irritating and infected fæcal contents to be an ideal nidus for the development of micro-organisms, and for the occurrence of inflammation of varying grades of severity. This does certainly occur, but comparatively seldom. Of 34 cases in which diverticula were found post mortem in one year, only one showed chronic inflammatory subserous changes of any degree of severity, and even in this case the inflammation was latent and asymptomatic. Three or four cases showed microscopically mild chronic inflammatory changes in the subserous fat. In the remainder no inflammatory changes were found. This point is worth emphasising. Radiologically, diverticula are by far the most common lesions in the colon; they are at least three times more common than the next most common lesions—namely, carcinoma and ulcerative colitis. Diverticulitis, on the other hand, is rare, and probably not more than 10 per cent. of the cases ever require surgical intervention for gross inflammatory complications. It is for this reason that the term diverticulosis, referring to the mere presence of uncomplicated diverticula, is preferable; the term diverticulitis should be reserved for the relatively small number of cases that give evidence of superadded inflammation.

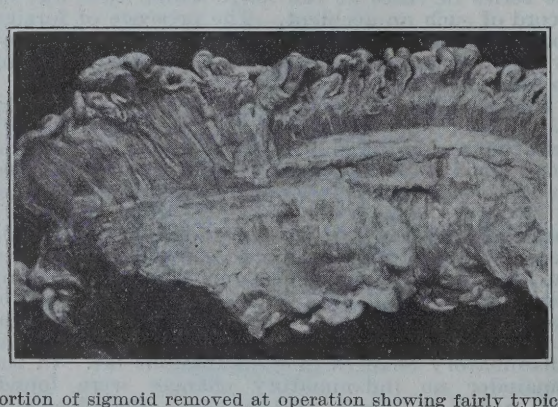
Inflammatory changes in and around diverticula may be arbitrarily divided into acute and chronic. Acute infections are often superimposed on chronic inflammatory changes and the latter are much more common.

In the *mild* types, little may be seen by the naked eye to draw attention to secondary inflammatory changes. Often, however, the fat of the appendices epiploicæ is

rather coarser and more fibrous than usual. Microscopically, the mucosa of the diverticulum may be almost normal, or slightly atrophied from the pressure of the concretion. Towards the fundus or apex of the diverticulum small collections of lymphocytic cells may be seen in the deeper parts of the mucosa (Fig. 5). These are irregular in distribution and may overlap the muscularis mucosæ so as to give the appearance of gaps in its continuity. These collections of lymphocytic cells resemble lymphoid follicles except that they are irregular in shape and distribution and do not have the appearance of a germinal centre. The solitary follicles may be found lying alongside them and are then quite easily distinguished. These lymphocytes are the response to the extension from the cavity of the diverticulum into the surrounding tissues of an attenuated poison—toxins of bacteria rather than the bacteria themselves. Outside the diverticulum there is some fibrous connective tissue in the immediate neighbourhood of the fundus, indicating the source of the chronic irritation from which it originated. The submucous fibrous coat, which followed the mucosa in its herniation through the muscle, is compressed into a compact and dense layer which usually cannot be well distinguished from the new fibrous connective tissue.

The *severer* grades of chronic inflammation are far more important from the surgical standpoint. In Fig. 6 the long narrow diverticula are seen passing up between the rugæ and extending beyond the muscular coat. In the subserous coat the thick layer of fat has been almost entirely replaced by dense white fibrous connective tissue, forming a homogeneous layer about 3 cm. in thickness, dull pearly-white, and cutting almost with the consistency of an unripe pear, so that it closely resembles carcinoma. Under the microscope, the mucosa, submucosa, and muscle coat show practically no changes, and there may be only very slight evidence of chronic inflammation in the mucosa of the diverticulum, manifested by a few foci of lymphocytes towards the fundus, slight mucosal atrophy, and diminution in the number of the gland crypts. The changes in the neighbouring subserous coat are most striking. It is for this reason that Wilson some years ago suggested the term "peridiverticulitis" as being more appropriate. All grades of transition from the original subserous fat to complete replacement by dense fibrous connective tissue are met with. The fibrous tissue is denser and less cellular in the immediate vicinity of the diverticula, while beyond, where the fat replacement is not complete, the connective tissue

FIG. 6.

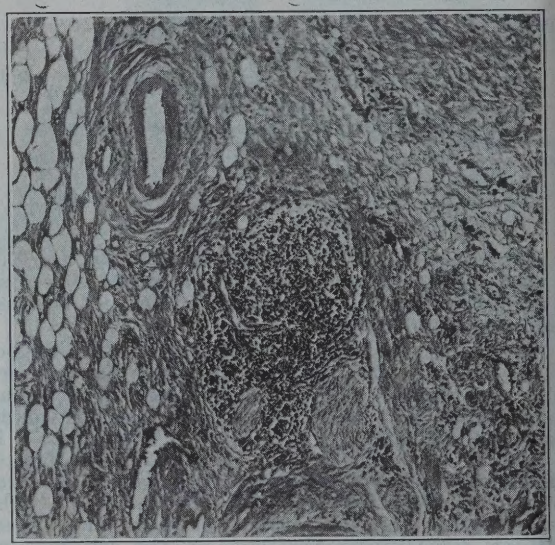


Portion of sigmoid removed at operation showing fairly typical diverticulitis and peridiverticulitis.

is younger and more vascular, and cells of inflammatory origin may be present. Small collections of lymphocytic cells are found in the region of the blood-vessels, and are sometimes seen extending in long lines along the lymph spaces between the fat cells. Fibroblasts appear, and young cellular and vascular tissue is formed. Towards the serous coat the process is less advanced, and fibrocellular strands can be seen extending between the fat cells (Fig. 7). Besides lymphocytes, there are lamellar connective tissue cells and plasma cells. Plasma cells, however, are seen only in the subacute or acute types of inflammation.

The final tendency is towards the formation of dense and more avascular connective tissue, replacing the normal structure of the subserous coat of the bowel. This renders the intestinal wall rigid, so that it loses its contractile and propulsive character and favours stasis. Again, the contraction of the fibrous tissue increases the already existing rugosity of the mucosa and consequently reduces the lumen. The last factor which may aid in the production of obstruction is angulation of the bowel, which is the result of adhesions and chronic inflammatory changes in the mesentery of the sigmoid. Peridiverticulitis of any degree is rarely present without some coexisting reaction of the peritoneal coat, and often the reaction is more acute in the peritoneum than throughout

FIG. 7.



A portion of the subserous coat of the bowel, the seat of peri diverticulitis. A collection of lymphocytic cells, and earl replacement of the fat by fibrous connective tissue, may b noted. (×150.)

the rest of the bowel wall. The mobility of th sigmoid, together with this adhesive peritoniti results in adhesions to adjacent viscera, and als of one loop of sigmoid to another; the latter is sti further favoured by chronic inflammatory change in the sigmoid mesentery, which shorten it an approximate adjacent loops.

The occurrence of acute inflammation in and aroun diverticula is dependent on the presence of particu larly virulent micro-organisms rather than on an great weakening of the defensive barrier forme by the wall of the diverticulum. The most commo organism found is a diplo-streptococcus, and this often associated with Gram-positive bacilli resemblin the anaerobic Welch bacillus. These acute inflan matory changes can be divided into two groups those in which there is gross rupture of the wa of the diverticulum, and those in which th inflammatory changes within the diverticulum a milder, and the wall of the diverticulum apparent becomes permeable to micro-organisms without an demonstrable solution in its continuity. In th latter group it is often difficult to identify th diverticulum or, more rarely, diverticula responsib for the acute inflammatory changes. In the fir group it is much easier, for there is usually an inten inflammatory zone, visible macroscopically, imm diately surrounding the diverticulum. In the cas in which the diverticula are apparently intact, th organisms pass to the surface and the peritoneu shows the greatest degree of reaction, while the oth coats may show relatively little change. It is th type of case which presented so much difficulty the days before the significance of diverticula w recognised, and it was thought that the source the peritonitis was extrinsic to the bowel. This the "pericolitis sinistra" of Rolleston.

Acute inflammatory complications in and arou diverticula can occur either as the first manifestati of infection in the diverticula, or in association wi chronic peridiverticulitis of long standing; these m present considerable differences as regards prognos

and sequelæ. Diverticula with a thin fatty subserous covering, in which fibrous changes are slight or absent, readily permit of acute involvement of the peritoneum. Inasmuch as no adhesions have formed, the resultant peritonitis may be widespread, though it rarely becomes generalised. On the other hand, if the diverticula are embedded in a thick layer of fat, and especially if there has been considerable subserous fibrosis, acute infection will travel to the surface just the same, but the sigmoid will have formed adhesions to the side wall of the pelvis or to adjacent viscera and a localised abscess is the most serious complication likely to result.

In the central area of the lumen of the diverticulum (Fig. 8) a portion of the inflammatory exudate, consisting of polymorphonuclear leucocytes, may be seen held together by a small quantity of fibrin. The gland crypts show necrosis of portions en masse, and the process is not so much a simple catarrhal desquamation of cells as a more severe type of inflammation in which necrosis is the prominent feature. Several of the crypts are seen to contain inflammatory cellular exudate, and one of the outlying crypts is seen to have perforated. The muscularis mucosæ and the submucous coat around the apex of the diverticulum have disappeared, and the subserous fibrous connective tissue in the immediate zone has been replaced by massive cellular exudation in which polymorphonuclears, lymphocytes, and plasma cells are intermingled. The reaction outside the diverticulum is more marked than in the diverticulum itself, probably because the main blood-vessels are just outside the sac, and the exudative phenomena are more prominent there. Towards the serous coat, the inflammation is subacute, but well-marked acute peritonitis is present. The microscopic picture in these cases of acute diverticulitis varies a little according to the virulence of the reaction, but

FIG. 8.

Low-power microphotograph of acutely inflamed diverticulum. A collection of polymorphonuclear leucocytes in the lumen of the saccule, and the fragmentation and necrosis of the component crypts may be noted. There is an acute inflammatory zone surrounding the diverticulum. (×25.)

the foregoing features are fairly typical. To these may be added great distension of the lymph spaces with serum, distension and congestion of blood-vessels, and sometimes small localised abscesses in the subserous coat.

SEQUELÆ.

All grades of severity of peritonitis occur, depending on the virulence of the original infection. Unlike the similar process in the appendix, acute diverticulitis rarely gives rise to generalised peritonitis. Localised pelvic peritonitis or localised abscess is the usual sequel. In 74 cases of peritonitis and abscess, 24 presented evidence of acute peritonitis, variably localised to the pelvis, and in 15 cases an abscess or abscesses were present (Table III). In 3 cases the peritonitis was classified as subacute at the time of operation, and in 26 cases it was chronic, manifested by adhesions to neighbouring viscera. In five cases the lesion was mainly in the mesentery, the case showing acute mesenteritis. In one instance, multiple small abscesses were found, but in the remainder of the 15 cases the abscess was single. Inasmuch as these abscesses are usually found in a mass of adhesions, they may have existed for a considerable time previous to operation; as a consequence, the pus in the older abscesses is often thick and sterile. They rarely contain more than 30 c.cm. of pus. Occasionally, however, when they have formed under the abdominal wall, they have been incised through the skin and considerable pus evacuated.

TABLE III.—*Position of Abscess.*

	Cases.
Between sigmoid and abdominal wall	3
,, ,, and adherent ileum	4
,, ,, or rectum and bladder	3
,, ,, and side wall of the pelvis	2
,, ,, cæcum and appendix	2
In the mesentery	1

Adhesions.—There is a distinct tendency for the sigmoid, which is the seat of diverticulitis and peridiverticulitis, to become adherent to surrounding structures, and this is favoured by the mobility of the sigmoid loop. The adhesions may localise infection, but they also predispose to formation of the fistula and may make radical surgical procedures difficult. Of 100 cases of diverticulitis investigated, adhesions were present in 74. The organs or structures to which the sigmoid was found adherent, together with the relative frequency of these adhesions, is given in Table IV. Adhesions to the bladder are the most common and the most significant. In 14 of the 24 cases, a vesico-sigmoidal fistula had formed. In the 20 cases in which the sigmoid was adherent to the side wall of the pelvis, the most vital structures affected were the left common iliac vessels and the left ureter. In nine cases the left ureter was densely bound down in adhesions, and in one case there was sufficient obstruction to the lower end to produce marked dilatation above. In only one of the 12 cases in which the sigmoid was adherent to the small intestine had actual perforation taken place. In one of the five cases in which the cæcum and appendix were adherent, the tip of the appendix was found lying in an abscess between the sigmoid and the cæcum, but the source of the abscess was diverticulitis and not appendicitis.

TABLE IV.—*Site of Adhesions.*

	Cases.		Cases.
Bladder	24	Cæcum	2
Left side wall of pelvis	20	Appendix	3
Small intestine	12	Abdominal wall	6
Left adnexa	3	Sigmoid	2
Right adnexa	1	Descending colon	1
Uterus	2	Generalised	8

Association of Diverticulitis with Carcinoma and Tuberculosis.

Carcinoma of the sigmoid occurs with diverticula in certain cases. In 1917 W. J. Mayo reported it in 13 out of a series of 42 cases. Inasmuch as chronic irritation in other situations has long been recognised as a factor in the production of cancer, it is certainly plausible to regard prolonged diverticulitis as a precancerous condition. Wilson, as early as 1911, drew attention to the apparently close relationship of the two conditions and reported four cases.

I have examined eight cases in which diverticula or diverticulitis coexisted with carcinoma. Without giving the detailed macroscopic and microscopic descriptions on which my opinions are based, I would summarise my findings by saying that the question whether the carcinoma develops propter hoc and not simply post hoc must remain undecided, but my impression is that the malignant process starts in the main lumen of the bowel and not in the diverticula, although the latter may be involved by extension. The gross inflammatory changes in these cases are, I believe, more often dependent on the malignant disease than on the diverticula. It is impossible to determine whether a chronic inflammatory process affecting chiefly the subserous

layer can have much effect in determining the genesis of carcinoma in the main lumen of the bowel. In one case the carcinoma involved the recto-sigmoid, while the mass from peridiverticulitis formed a localised tumour several inches higher in the sigmoid, the intervening area of bowel being apparently normal. W. J. Mayo states that, excluding the stomach, most gastro-intestinal cancers are situated at the recto-sigmoid. Diverticulitis, on the other hand, is just as likely to affect the sigmoid higher up. Since approximately one person in every eight over the age of 45 has diverticula of the sigmoid, and since diverticulitis and carcinoma are most common at the same age period, it is reasonable to assume that they will coexist in a certain proportion of cases. I believe that the degenerative changes in the sigmoid consequent on advanced middle age, constitute a common factor responsible both for the occurrence of diverticula and for the higher incidence of carcinoma at this age.

In two cases tuberculosis of the sigmoid was found coexistent with diverticulitis. These are discussed in another article. Hyperplastic tuberculosis of the sigmoid gives a pathological appearance which is almost identical with that of diverticulitis, and when both occur in the same segment of bowel, there is great difficulty in assessing the rôle which each plays in the pathological picture produced.

Clinical Features.

In the absence of inflammatory changes, diverticula may not cause symptoms. However, the colon which is the seat of diverticulosis is often spastic and there may be considerable constipation. Even then it may be difficult to determine whether the constipation is due to diverticula or to the habit of the individual. On the other hand, this spasticity may be so marked as to cause symptoms suggestive of organic obstruction, and one is frequently surprised at operation to find but slight interference with the calibre of the bowel when the severity of the clinical symptoms had suggested moderately severe organic stenosis. Again, when inflammatory complications are present, even though there are only one or two diverticula in the sigmoid, one may become acutely inflamed and thus bring the patient to the surgeon. In such cases obstruction may not be a feature, and there may be little previous history to direct one's attention to diverticulosis of the sigmoid as the probable ætiological agent. In most cases there is gradually increasing stenosis of the bowel from chronic diverticulitis and peridiverticulitis, producing more or less constipation. From time to time, however, superadded acute inflammation may cause a flare-up, during which the sigmoid becomes swollen and tender, and partial or complete obstruction may supervene. The patient may seek advice during the first of these attacks, or may pass through several of them with partial or complete relief in the intervening period. Many of the patients come to the physician with complaints which immediately suggest an investigation of the left lower quadrant of the abdomen, but this is not invariable (Table V.).

TABLE V.—*Primary Complaint in Cases of Diverticulitis.*

	Cases.
Pain in left iliac fossa	42
Urinary symptoms	16
Pain in both lower quadrants	11
Increasing constipation	13
Abdominal pain not localised	8
Epigastric distress	4
Pain in region of umbilicus	3
Pain in rectum	3
Bleeding from the bowel	5
Diarrhœa	4

Classification of Cases.

I found that these 100 cases fell, roughly, into six groups.

Group 1 is made up of cases in which there was a long history, extending over months or years, of gradually increasing intestinal symptoms ultimately amounting to chronic obstruction, or terminating more abruptly in subacute or acute obstruction. It comprised 28 cases, in 11 of which the symptom terminated in an acute attack, and in one in a subacut attack. In the remaining 16, the symptoms wer those of gradually increasing constipation, bu without any acute or subacute attack.

In *Group* 2 there was a history of repeated attack of acute or subacute obstruction with intervenin periods of almost complete freedom from symptom or at the most only constipation. There were 2 cases in this group ; in all but two there was a histor of two or more acute or subacute attacks.

Group 3 is a combination of the two precedin groups ; there was an early history of months years of gradually increasing constipation, followe by a period in which there were repeated attacks acute or subacute obstruction ultimately demandin medical aid. This group comprised 12 cases.

Group 4 comprised 16 cases in which genito-urinar symptoms dominated the clinical picture, and was mainly on account of this that the patien sought advice. In 14 cases in the group, examinati revealed a vesico-sigmoidal fistula. In 11 of t cases there was a history of bowel trouble previo to the onset of the genito-urinary symptoms. three of the cases of vesico-sigmoidal fistula the was no history of preceding bowel trouble.

Group 5 comprised eight cases in which maligna disease was associated with diverticulitis in t sigmoid. This figure must not be taken as reflecti the frequency with which malignant neoplasm a diverticulitis are associated ; it is simply a series cases in which pathological specimens were availab Clinically, this series divided itself into two su groups, in the first of which there was a defin history of diverticulitis going back a year or tw and in the second the diverticulitis was mild or late and the symptoms were suggestive of carcinoma fr the outset.

Group 6 comprised seven cases which could n strictly be placed in any of the other groups becau of atypical features. Either there was no history constipation, or diarrhœa was a feature. In one c constipation and diarrhœa alternated. Pain mig or might not, be present, but there was a tum in the left lower quadrant. In view of the fact t constipation and obstruction have been emphasi as being the natural consequence of diverticuli this small group of atypical cases demonstrates t there may be exceptions in which the ordinary clini manifestations of the disease are absent.

Clinical Features of the Acute Attack of Diverticul (Groups 1, 2, *and* 3).

The cases in these three groups, about 70 per ce of the total, were characterised by constipation one or more acute attacks, possessing certain s tinctive features which constitute a syndrome of lower left quadrant almost pathognomonic diverticulitis.

An attack is usually preceded for a few days b slight increase in the degree of constipation, sl bloating in the upper abdomen with belching, often mild rolling gas pains in the lower abdo of momentary duration. The onset of the a stage is often precipitated by some form of pu or by ingestion of rough or irritating food such fruits or vegetables. Occasionally it appears follow exertion or straining at stool. Severe col pain sets in, usually in the left lower quadr Sometimes at the outset the pain is general throughout the abdomen or distributed equ through both lower quadrants, but as a rule it fir settles down in the left lower quadrant, and if present in both lower quadrants it is always m pronounced on the left.

The *pain* is variously described as sharp, cutting, gri or shooting, and may remain strictly localised to the iliac fossa or may radiate over the crest of the ilium int left side of the back, into the left groin and testicle, in one instance, into the left knee. Radiation into testicles was observed in one case in which the pain present in both lower quadrants. The pain is often s enough to double the patient up ; at other times h

bend over and press on the stomach for relief. This, however, is only at the outset, for if there is peritoneal involvement he finds greater comfort in complete rest. It is often severe enough to require morphine.

There is sometimes an initial chill, and then the temperature rises to 100° F. or higher. In 30 of the cases in which fever was present with acute attacks, it varied between 100° and 102°. Nausea is not infrequently present, and more rarely vomiting. Usually, however, as with appendicitis, the patient vomits once or twice only. The bowels remain obstinately constipated, no flatus is passed, and enemas administered for relief often return clear. Urinary symptoms are common. In 41 of the 100 cases examined there were symptoms referable to irritation of the bladder. Excluding for the moment the 14 cases of vesico-sigmoidal fistula which will be considered later, there still remained 27 cases in which the relationship of the acutely inflamed sigmoid to the bladder produced difficulty or inability to start the stream, urgency, frequency, nocturia, and burning pain sometimes at the beginning and sometimes at the end of micturition. In fact, some degree of vesical tenesmus is typical during an acute attack of diverticulitis. The patient frequently observes that, apart from urinary symptoms, pain is relieved when the bladder is empty.

On examination there is generalised abdominal distension, or localised fullness in the left lower quadrant. On palpation, the left iliac fossa is tender, but muscular rigidity, if present, is usually very slight. In the left iliac fossa an elongated tender tumour in the position of the sigmoid can usually be palpated. This tumour was present in 56 per cent. of the cases of surgical diverticulitis.

On account of the associated obesity, abdominal distension, and tenderness, this palpable mass in the left iliac fossa is usually best felt by the rectum or bimanually. It varies in size and shape from that of a hen's egg to that of an orange or lemon. It is smooth, partially fixed, and usually very tender. In consistency it is firm, rarely hard, and occasionally it has been mistaken for an abscess. Because of the mobile nature of the sigmoid and its tendency to form adhesions, the position of the mass, although almost invariably in the left lower quadrant, may vary somewhat. It may be accessible to the examining finger by rectum, or it may be high and far out in the left iliac fossa. Sometimes it is close in toward the median line, and may be palpated between the bladder and rectum. The most distinctive feature about the sigmoid tumour is its tendency to appear during the acute febrile period and to disappear in the intermission. The disappearance may not be complete, but there is always marked recession in size after the acute attack has passed. In some instances the patient has been the first to notice the tumour, and has not only seen the fluctuations in size during the acute attacks, but has also affirmed that the mass was larger during the present attack than during a preceding one.

An acute attack of diverticulitis may last from a few hours to two or three days. Occasionally it is prolonged for a week or more, or until relieved by operation. Defæcation usually gives marked relief, although it may be attended by considerable pain, and enemas, if persevered with, will usually relieve most of the discomfort. Occasionally slight diarrhœa may set in for a day or two, or an excessive amount of mucus may be passed. Pari passu with the relief of the abdominal distension the mass in the left lower quadrant becomes smaller and less tender, and may disappear entirely. During the acute period, from 10,000 to 20,000 leucocytes is a common finding. While it is true that in a considerable proportion of cases attacks of acute diverticulitis will abate if left alone, occasionally the obstructive symptoms are so alarming as to call for operation. In seven cases in the present series colostomy had been performed before examination at the Mayo Clinic.

Symptoms of Fistula (*Group* 4).—The symptoms referable to the development of fistula were either preceded by symptoms suggestive of a flare-up in the bowel condition or developed suddenly without any such warning. Often there was increasing constipation and intermittent pain in the left lower quadrant for a week or more. Impending perforation into the bladder was heralded by pain and tenderness immediately over the vesical area. Sometimes, however, dull and boring perineal pain was experienced for several days, and a degree or two of temperature was invariably present. Then an attack of urgent, burning, and painful micturition was accompanied by the passage of small grape-seed-like fæcal particles through the urethra and also audible gas at the end of micturition. The patient usually noticed that the urine was heavily loaded with sediment and had a fæcal odour. The passage of gas and fæces by urethra usually relieved the acute pain, but cystitis remained, resulting in urgency, frequency, and nocturia. These symptoms persisted intermittently, with occasional flaring-up of the cystitis, until relieved by operation.

Differential Diagnosis of Carcinoma (*Group* 5).—The clinical distinction between diverticulitis and carcinoma may be difficult. In fact, if carcinoma develops in a colon where there is diverticulitis, the differentiation may be well-nigh impossible, except by the pathologist, until the malignant process is advanced. Cramping pain in the left lower quadrant was usually present, but frequently burning and pain in the rectum was also complained of, and painful defæcation and tenesmus were associated features. It is true that in uncomplicated cases of diverticulitis tenesmus may occur, but it is rare, and though painful defæcation may immediately follow an acute attack, it is not present at other times. Pain and burning in the rectum are rarely met with in diverticulitis. Bleeding from the bowel is suggestive of carcinoma; it is rare in diverticulitis and, if it occurs, search ought to be made for hæmorrhoids, which are usually present as a result of the constipation. Mucus may be passed in both diverticulitis and carcinoma, but it is much commoner in the latter and is usually streaked with blood. In malignant disease pain, if present, may go through to the back, a very infrequent radiation in diverticulitis. There is usually loss of weight in both conditions. The barium enema may demonstrate a filling defect only. The sigmoidoscope will usually reveal carcinoma if the tumour is accessible, but it is rarely possible to diagnose diverticulitis in this manner.

TREATMENT.

Uncomplicated diverticula of the colon require no special treatment beyond controlling the constipation by appropriate measures which keep the diverticula of the sigmoid free, so far as possible, from the formation of hard concretions which are the precursors of inflammatory changes.

Even when inflammatory changes have taken place, the tendency is towards increasing conservatism in treatment; radical operations, implying extirpation of the affected portion of the intestine, are not to be undertaken lightly. Medical management, in a proportion of cases, not only tides the patient over an acute attack, but may even safeguard him against subsequent attacks. In severer cases, however, and when obstructive symptoms are urgent, surgical intervention may be necessary; the choice lies between colostomy, with the possibility of resection later, or resection without preliminary colostomy. The resection may take the form either of a Mikulicz operation, or an anterior tube resection of the Balfour type. In the present series, a Mikulicz resection was performed in 42 cases; in 21 an anterior tube resection was performed by the Balfour method, either with or without preliminary colostomy; in eight colostomy alone was performed. The surgical procedures carried out in the remaining cases included local excision of diverticula, resection of a portion of the circumference of the intestine, plastic closure of vesico-sigmoidal fistulæ, and short-circuiting operations to relieve obstruction.

There was a mortality of 10 per cent. Most of the remaining patients, traced for years, were relieved, but a few still had some constipation which, however, was readily controlled by paraffin.

(*Bibliography at foot of next page.*)

THE TREATMENT OF DIPHTHERIA CARRIERS.

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THE carriers from all the Metropolitan Asylums Board Infectious Diseases Hospitals were collected together in the North-Eastern Hospital and made the subject of an extensive investigation, of which the primary object was to discover why some patients should continue to harbour diphtheria bacilli for prolonged periods after convalescence from an attack of clinical diphtheria. This part of the investigation took a considerable time to complete, and the findings obtained therefrom have been published by Thomson, Mann, McCartney, and Harvey[1] in the Annual Report of the Metropolitan Asylums Board for 1926–27. The presence of pathological conditions or physical abnormalities in the nose, nasopharynx, or throat was found to be the main predisposing factor in inducing or sustaining the carrier state. It also appeared that the diphtheria bacilli were living an extra-corporeal or saprophytic existence in the inflammatory products present along with these abnormalities, and were not existing actually in living tissues. It followed from this that the correction of such abnormalities as enlarged turbinates, deflected septa, with crusting of the nasal mucosa and nasal discharge, and septic and ragged tonsils, ought to go a long way towards curing the carrier condition. The methods of treatment used in the investigation had therefore this object in view. The cases were all "chronic carriers," that is, people who had harboured true virulent diphtheria bacilli for a period of at least 12 weeks. This definition of a carrier, though arbitrary, was important, since it implied that the infection was not merely a transient one.

Criterion of Cure.

It was the practice at the North-Eastern Hospital to take cultures from each patient once a week, and only to regard a carrier as free from infection when six consecutive negative cultures were obtained. Very many cases, after yielding negative cultures for three, four, or even five weeks, became positive once more and remained so for prolonged periods. It is always wise to have the cultures taken by someone competent to do so, preferably the person who is to examine them. Thus at the North-Eastern Hospital all the carriers were cultured personally and were not regarded as "free from infection" until six weekly negative cultures had been obtained.

The Throat Carrier.

The carrier with bacilli in the throat only does not appear to present any difficulties of treatment. Removal of the tonsils as first advocated by Pegler,[2] or of the tonsils and adenoids, gives very satisfactory results.

At the North-Eastern Hospital 60 cases were treated by the removal of tonsils and adenoids, the operations being performed by Mr. Humphrey Marriner. Of these 60 cases 17 harboured bacilli in the throat only, and of the 17 cases 16 were cured. The remaining 43 cases had bacilli in the nose or ear as well as in the throat, and of these 19 were cured. It was noted that the percentage of "cures" decreased in direct proportion to the extent to which the nose cultures were positive. Nine patients who were operated upon because of large and unhealthy tonsils and of intermittently positive cultures showed the Klebs-Löffler bacilli in the crypts of the tonsils removed at operation, although the preceding cultures had been negative. Four nurses who harboured diphtheria bacilli in the throat had their tonsils removed before the end of the 12 weeks' period which would have made them officially chronic carriers. In each case a cure resulted.

It will thus be seen that if the bacilli are confined to the throat the likelihood of a cure from removal of the tonsils and adenoids is great. The optimum time for the operation seems to be earlier than is usually advised. If the throat cultures remain persistently positive, and if the tonsils show any evidence of being the site of an inflammatory process, they should be removed six to eight weeks after the onset of the infection. The tonsils removed at operation were examined culturally and by section for the presence of diphtheria bacilli, which were present in the tonsils and adenoids in 61 per cent. of cases. It was evident that the tonsil likely to harbour diphtheria bacilli was not the large, clean tonsil, but the small, ragged septic one with deep crypts. It was usually possible to foretell by clinical examination the tonsil which on removal, would yield diphtheria bacilli on culture. In 1917 H. Stévenin,[3] and in 1921 G. H. Weaver,[4] drew attention to the fact that an attack of follicular tonsillitis in a carrier freed the carrier from infection. A. Schiøtz,[5] in 1919, suggested that this observation might be applied practically by spraying the throat with living staphylococci and thus inducing an attack of tonsillitis. This method has not been tried during the present investigation, but several of the carriers in this series contracted severe tonsillitis and, although the Klebs-Löffler bacillus disappeared temporarily from the throat, it invariably returned when the acute stage of the tonsillitis had subsided.

The Nose Carrier.

Nasal carriers of diphtheria are very refractory. A constant feature is the presence of rhinitis, which may take the form of a watery or purulent discharge or of extensive crusting round the anterior nares sufficient in some cases to obstruct the breathing. The great majority of chronic carriers have diphtheria bacilli in the nose. Various methods of treatment have been suggested from time to time, but none ha

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proved completely efficient. Local application of antiseptics to the mucous membrane has never been accepted as a completely satisfactory means of treatment. Vaccines have been used by various workers,[6 7 8 9] who claim more or less satisfactory results.

At the North-Eastern Fever Hospital 38 chronic and persistently positive carriers were treated by vaccines of the organisms, other than diphtheria bacilli, present in the nose. Only in three cases were the vaccines composed solely of Klebs-Löffler bacilli. They were all autogenous. The abnormal condition of the nose was ascribed to the presence of pyogenic organisms, rather than to the diphtheria bacillus, and it was therefore hoped that, if the former were removed by autogenous vaccines, the condition of the nose would improve and the diphtheria bacilli would no longer obtain a pabulum for growth. The organisms included staphylococci (albus and aureus), pneumococci, and hæmolytic streptococci. The results were only moderately satisfactory. Of the 38 cases treated 16 cleared up after one to nine weeks. The remaining 22 cases remained positive, although some of them improved. Material from the noses of the carriers treated was inoculated on to blood-agar plates, and it was found that all the organisms from which the vaccines had been prepared had disappeared from the noses, except the staphylococci. In view of this fact a further course of treatment was sought which might be effective in clearing the ubiquitous staphylococcus from the nasal passages. This treatment took the form of a mildly alkaline nasal douche, made up as follows: sodium bicarbonate, sodium chloride, sodium biborate, aa. ℥ij. to water ℥xx., i.e., about 2 grains of each per oz. of water. This stock solution was diluted for use with equal parts of warm water, and the noses were douched night and morning, the solution being allowed to run into the nose and out of the mouth by gravity. In some cases a small quantity of hydrogen peroxide (about one drachm per pint) was added to the solution to soften crusts around the nares.

The results of nasal douching were very satisfactory. Crusting and rhinitis were greatly lessened, and nasal discharge usually diminished or ceased altogether. The nasal mucous membrane became pink and healthy and altogether the condition of the nose was greatly improved. Material from the noses of the carriers thus treated was inoculated as before on to blood-agar plates, and the noses which before treatment had yielded an abundant flora were now found to be practically sterile. Moreover, although the former flora usually returned almost immediately when the douching was discontinued, the diphtheria bacilli did not do so in a large proportion of the cases.

In all 62 cases were treated. In 7 treatment had to be stopped owing to the refractory behaviour of the children. Of the remaining 55 cases 27 cleared up in from one to seven weeks. Eight cases cleared up after one relapse, and a further 8 cases cleared up after a second course of treatment. The treatment had no effect in 12 cases. Most of the children behaved quite well when being douched, and those who showed any nervousness quietened down after a short time. This form of treatment is inexpensive and easily carried out. The procedure adopted was to continue the douching until three negative cultures had been obtained at weekly intervals. Douching was then discontinued, and the carrier was discharged after a further three negative cultures, taken at weekly intervals. Thus any doubt that the negative cultures might have been due to the douching was removed. The youngest child treated was 8 months old. The complete results were:—

		Per cent.
Total cases treated	62	
Cases in which treatment had to be stopped	7	
Actual cases treated	55	
Cases cured after one course of treatment	27	= 49
,, two courses ,,	8	= 14·5
,, one relapse	8	= 14·5
Total number of cures	43	= 78
Total number of failures	12	= 22

The results obtained from douching were even better than they appear, since the carriers chosen for treatment were mostly cases who were persistently and strongly positive and who had failed to clear up after undergoing various other forms of treatment.

A method of spraying the nose with an alkaline spray was tried, but the results were unsatisfactory.

A small series of cases was treated by autogenous vaccines, together with daily nasal douching. The results in 9 cases were that 3 cleared up immediately treatment was commenced; 3 ceased to carry virulent Klebs-Löffler bacilli, but were found to be harbouring non-virulent organisms; 1 cleared up after two vaccines; and 1 failed to clear up.

A 1 per cent. solution of iodine oil was applied to the noses of four carriers. Of these three cleared up, while the other failed to do so. There was some evidence, however, that the cases were clearing up before treatment commenced, and as this form of treatment had previously been found of no avail, it was not continued.

Antrum and Adenoid Investigation.

When cases fail to clear up after vaccines and nasal douching, the antrum of Highmore was suspected as the source of the bacilli. The antrum was opened and explored in three cases. Diphtheria bacilli were isolated from it in two cases, under circumstances which excluded contamination, while in the third case the examination revealed no growth. The antrum was thoroughly cleaned out in one of the patients, and the case cleared up with the help of nasal douching. It is usually very difficult to operate upon the antra of a young child, and permission may be refused. X ray photographs are of little, if any, help. The antrum, however, should be kept in mind as a last resort in the investigation of very persistent nose carriers.

Sixteen carriers were operated upon, principally to see the effect of the removal of the adenoids upon the carrier state. In no case, however, were the adenoids removed without the tonsils, as the latter always showed sufficient evidence of abnormality or definite disease to warrant their removal. All cases chosen had strongly positive nose cultures; three of them were cured, and diphtheria bacilli were isolated from the adenoids in two of these. Removal of the adenoids does not seem to be effective in the treatment of nose carriers.

The Ear Carrier.

The treatment of ear carriers is extremely difficult. No satisfactory form of treatment was discovered. The discharge often ceased altogether for several weeks and then, without any apparent cause, began again. The commonest method of treatment was to instil hydrogen peroxide and alcohol drops into the ear. Cases were treated by vaccines, removal of tonsils and adenoids, mastoidectomy, and nasal douching. The results were as follows:—

	Cures.	No effect.	Total.
Removal of tonsils and adenoids	3	3	6
Vaccines (consisting of organisms isolated from the nose)	2	1	3
Nasal douching	3	1	4
Mastoidectomy	1	1	2
			15

Many so-called "carriers" were admitted to the North-Eastern Hospital on suspicion of harbouring diphtheria bacilli in the ear, but the bacilli were really saccharose-fermenting diphtheroids, and not true virulent Klebs-Löffler bacilli. Since these carriers are so intractable it is fortunate that the presence of virulent diphtheria bacilli in discharge from the ear is uncommon.

Results of Various Forms of Treatment.

Form of treatment.	No. of cases treated.	No. (and per cent.) of *immediate* cures.	No. (and per cent.) of *delayed* cures.*	Total No. (and per cent.) of cures.	No. (and per cent.) of failures.
Vaccines	38	10 (26·4)	6 (15·7)	16 (42·1)	22 (57·9)
Nasal douching	55	23 (41·8)	20 (36·2)	43 (78)	12 (22·2)
Vaccines and nasal douching combined	7	3 (42·9)	1 (14·2)	4 (57·1)	3 (42·9)
Removal of tonsils and adenoids	60	33 (55)	2 (3·3)	35 (58·3)	25 (41·7)

* Over three weeks and including relapses and cases in which a second course of treatment was necessary.

It should be noted that the cases chosen for treatment were the most persistent and chronic carriers obtainable.

In addition to the specific methods general hygienic methods were always adopted in an endeavour to improve the health of the carriers. It was found, however, that the general health was usually extremely good, and this factor seems to have little if anything to do with the duration of the carrier condition. Exposure to carbon arc radiation was tried, but appeared to have little effect.

Conclusions.

1. The most important carrier is the one who harbours diphtheria bacilli in the nose.

2. The only satisfactory form of treatment for the nose carrier tried during the investigation was douching with a mildly alkaline nasal douche. Properly carried out this yields excellent results.

3. Tonsillectomy yields very satisfactory results in carriers whose bacilli are confined to the throat.

4. The ear carrier, happily uncommon, is very difficult indeed to deal with, and does not respond readily to treatment.

5. The treatment of diphtheria carriers should mainly consist in rectifying local abnormalities and pathological conditions responsible for the carrier state. If this is done properly the coexistent abundant flora will be diminished, and the diphtheria bacillus will probably disappear also.

6. Diphtheria carriers should be treated as early during convalescence as is compatible with safety, always bearing in mind the likelihood of diphtheria complications. The longer the bacilli are allowed to remain in the infected area the more difficult does their removal become. In addition, apart from the loss of education to the children, the burdens which diphtheria carriers lay upon the finances of the various public health bodies make the necessity for their early treatment and cure a very important consideration.

I wish to thank Dr. F. H. Thomson, medical superintendent of the North-Eastern Hospital, and Dr. J. E. McCartney, director of research and pathological services to the Metropolitan Asylums Board, for their unfailing courtesy and assistance throughout the investigation.

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CARDIAC INFARCTION WITHOUT PAIN.

A SERIES OF EIGHT CASES.

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ALTHOUGH the syndrome of cardiac infarction with prolonged anginal pain is now well recognised, few cases have been recorded of infarction without pain. We have recently seen seven cases where the patient was able to refer the beginning of his illness to a particular day on account of the sudden onset of severe dyspnœa, but this was completely free from pain.

CASE 1.—A police sergeant, aged 57, enjoyed good health until February, 1926, when he suffered from an attack of "influenza" characterised by dyspnœa and giddiness. He recovered completely from this and, save for a slight degree of shortness of breath when bicycling, his health remained perfectly normal during the rest of the year. On June 29th, 1927, he "caught a cold," and was confined to bed on account of great dyspnœa and a severe cough. He recovered rapidly, but the dyspnœa persisted and became more troublesome, so that he experienced considerable difficulty in walking even on the level, and required four pillows for comfort at night. During the last three weeks he had noticed that he was passing less urine. He had not had any pain.

Examination on Jan. 17th, 1928, showed a large heavily built man who appeared distinctly pale. The pulse was 134 and regular. The arteries were not thick; blood pressure 140/90. The apex of the heart was in the sixth space and 1 inch external to the nipple. The impulse was moderately heaving in character. The first sound at the apex was short and was reduplicated from the nipple line to the sternum. There were no murmurs. There was no œdema; the liver was not enlarged, and the lung bases were clear. The urine contained no albumin. The Wassermann reaction of the blood serum was negative. The electrocardiogram showed a left-sided preponderance.

He was put to bed and given digitalis, ℥xx., four times daily for eight days, followed by ℥xxx. daily. During this period his pulse fell to 80, and his urine output increased from 20 oz. before treatment to an average of 40 oz. All trace of the reduplication disappeared. On Feb. 10th he died suddenly in bed.

Post-mortem Examination.—The right side of the heart was engorged with blood, but appeared healthy. All the valves were normal. The cavity of the left ventricle was considerably reduced by the presence of ante-mortem clot, which was firmly adherent to the cardiac wall. This clot was distributed in two irregular areas, the first and larger of which involved the apex, while the second started posteriorly in the region of the papillæ of the mitral valve, and traversed the ventricle horizontally, ending near the interventricular septum. Corresponding to this distribution of the clot there was extensive disease of the muscular wall. At the apex it was almost wholly replaced by dense white fibrous tissue, so that only a thin strip remained on the pericardial surface. In the second area fibrosis was not so advanced, but was evident as a belt encircling the ventricle. Histological section showed that the clot was firmly organised to a thickened endocardium. The proximal 2 inches of both coronary arteries were thickened, atheromatous, and partly calcareous. The left contained a strip of active ulceration and destruction of the intima. There was complete occlusion of the following vessels: (1) a large branch of the left coronary, descending in the anterior interventricular sulcus to the apex, and a small branch of this supplying an area in the region of the interventricular septum; (2) two large branches of the right coronary, from a clot lodged at their bifurcation, supplying the posterior wall of the ventricle and extending round to the anterior surface as far as the interventricular septum. This was an abnormal distribution, since this area is usually supplied by the circumflex branch of the left coronary. Sections of the four occluded arteries showed a trace of lumen in each. In two of these multiple channels could be seen. The cellular structure of the tissues occluding the vessels suggested organised clot rather than inflammatory endarteritis, so that it appeared as if partial recanalisation had occurred (Fig. 1).

CASE 2.—A male, aged 51, a patient of Dr. Williamson, had enjoyed good health until December, 1927, when he "caught a cold" after a strenuous day. For this he had to go to bed for a few days as he was so short of breath; and during this time his ankles were swollen and he had a troublesome cough. He recovered rapidly, but his dyspnœa persisted so that he has not felt quite right since. On Feb. 7th he spent the day motoring, and caught a further "cold," which kept him in bed till the time of examination. He had the same symptoms as before, with the addition of some tightness at the lower end of the sternum, which he attributed to coughing.

Examination on Feb. 17th, 1928, showed a large man who appeared rather pale. His arteries were only moderately thickened; blood pressure 160/110. The pulse was 100 and irregular from frequent extrasystoles. The apex of the heart was in the sixth space and external to the nipple and the impulse was slapping in character. The second sound was reduplicated from the apex to the sternum. There were no murmurs. Œdema was present over both ankles, and crepitations could be heard at both bases. A polygram (Fig. 3) showed a low-tension pulse with a moderately persisting alternation, and ventricular extrasystoles.

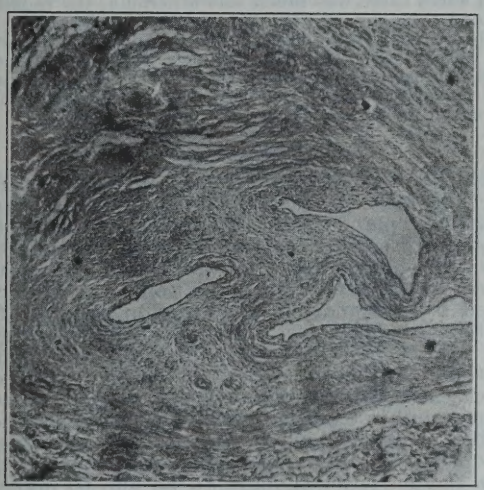
Ten days later he had symptoms of infarction in the lungs, with pain in the right side of the chest and hæmoptysis. He recovered from this, and is now free from all signs of heart failure.

Although post-mortem evidence of infarction is lacking, his condition was so exactly comparable to the other cases that it can hardly be doubted that he has one or probably two infarcts in his myocardium.

CASE 3.—A man, aged 54, a patient of Dr. Hinsley Walker. Four years ago, after rapidly mounting two flights of stairs to his room, he grasped the bed rail and fell on his back with his "face working." A doctor pronounced the condition to be a faint and kept him in bed the next day. Since that time he has been in good health, but he noticed he could not manage the long walks he used to take, as he became short of breath. During the last six months he has had a cough and some nocturnal attacks of dyspnœa, with tightness round the lower part of the chest. Deep cyanosis had been noticed when he was turned on his left side to reduce prolapsed hæmorrhoids.

Examination on Feb. 28th, 1928, showed a big man whose face was cyanosed. His pulse was 120, and his blood pressure was 160/110, but these readings must be discounted to a certain extent, since the patient was apprehensive. The radial artery was impalpable. The apex of the heart was half an inch outside the nipple line. The first sound at the apex was replaced by a systolic murmur which was

FIG. 1 (Case 1).



Section of terminal anterior branch of left coronary artery, showing recanalisation in granulation tissue of organised thrombus.

conducted out to the axilla. The second sound and the sounds at the base were normal. The lungs were normal except for a few rhonchi posteriorly. The liver was not palpable and there was no œdema.

A fortnight later he had a hæmoptysis and became feverish. Three days after he died suddenly.

Post-mortem Examination.—Both auricles and the left ventricle of the heart were much enlarged. There was no valvular disease, but the mitral orifice was greatly dilated. The anterior surface of the left ventricle near the apex was firmly adherent to the pericardium by a dense fibrous strand with an area of attachment of about 1¼ inches in diameter. This area formed the apex of a spherical aneurysm of the ventricle approximately 2 inches in diameter. The wall of the aneurysm was thin and calcareous, and contained little muscular tissue. The lining endocardium was yellow, thickened, calcareous, and partly ruptured by ulceration. The left coronary was in a condition of advanced atheroma throughout its course, with ulceration and calcification. The main branch, descending along the anterior interventricular sulcus, was completely obliterated by old organised tissue. The terminal portion of this branch was patent but collapsed. The right coronary was normal except for some ulcerative atheroma in its proximal portion. At the apex of the left lung there was a necrotic area where the lung was firm and solid. On section all this area was seen to be involved in an acute necrosis which was breaking down into pus. The main branch of the pulmonary artery supplying the apical region was plugged with a thrombus for about one inch, and the thrombus had extended into the branch supplying the remainder of the upper lobe where the lung had a normal appearance. There was a bilateral pleural effusion, some ascites, and a nutmeg liver.

The patient appeared to have had two pulmonary infarcts. The first caused the hæmoptysis and the lung abscess, while the second was followed by sudden death.

CASE 4.—A man of 63 was in good health until July, 1926, when he had a sudden and severe attack of dyspnœa, which obliged him to keep to his bed for two months. He

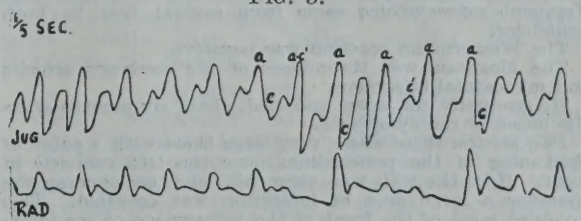
FIG. 2 (Case 1).

Slice of left ventricle in lateral plane, showing two main areas of fibrosis: (1) apex; (2) middle transverse zone cut at two points.

recovered to a certain extent, but could never go back to his work, and a year later he was admitted to King's College Hospital. He had not had any pain.

On examination he was slightly cyanosed and the legs and lower part of the body were swollen. The pulse was irregular from extrasystoles. The blood pressure was 162/116, and the radial artery was thick. The apex-beat was almost imperceptible, but the heart appeared to be enlarged in both directions. The first sound at the apex was reduplicated, and there were soft systolic murmurs in the mitral and tricuspid areas. The liver was large and tender. The urine contained albumin, and the blood-urea was high, 145 mg. per 100 c.cm. The electrocardiogram showed a left-sided preponderance with an inverted T wave in lead I, and a flattened T in lead II. The P.R. interval was increased to 0·24 of a second. Extrasystoles were present, arising from the right ventricle and from an inter-

FIG. 3.



Polygraph tracing from Case 2, showing low-tension pulse, alternation, and ventricular extrasystoles.

mediate focus near the septum. For a time he improved under treatment, but later heart failure supervened, and he died 15 months after his initial attack.

Post-mortem Examination.—The heart was very large; on the anterior aspect of the left ventricle near the apex the pericardium was adherent to the chest wall. Corresponding to this was an area of fibrosis in the ventricle where the muscular wall was thin. This extended into the adjacent part of the right ventricle and into the lower and anterior part of the septum, and was continuous with a mural thrombus which was firmly attached to it. Inside the right ventricle was a recent thrombus, and there were some infarcts in the lungs. The anterior descending branch of the left coronary artery was in a state of advanced atheroma, but the main channel seemed to be patent as though it were recanalised. Microscopical section of the infarct showed that the muscle was replaced by fibrous tissue and that the small arterioles were obliterated by overgrowth of their intimal coats.

CASE 5.—A man, aged 52, had a sudden and severe attack of shortness of breath in September, 1926. He had previously enjoyed good health. This dyspnœa affected him apart from exertion, and he was completely incapacitated. At the same time a troublesome cough developed, and he experienced paroxysmal attacks which he called asthma. After about a month he recovered sufficiently to be able to work a little in a warehouse. He soon had to give up, however, and came into hospital. At no time had he had any pain in the chest.

On admission he was orthopnœic and pale, with a little cyanosis. The pulse was irregular from frequent extra systoles, the radial was moderately thick, and the blood pressure 140/90. The heart was considerably enlarged, and the apex beat was wavy. There was reduplication of the first sound at the apex, and an apical systolic murmur. The jugular veins were full, the liver was large and tender, and the ankles were swollen. The electrocardiogram showed left bundle branch block with premature beats arising in the left ventricle. The Wassermann reaction was negative.

During two months in hospital on digitalis and diuretin he improved considerably. Heart failure recurred, however, and he died suddenly in hospital 11 months after his original attack.

Post-mortem Examination.—The heart weighed 750 g. All the chambers were dilated and the walls of the ventricles were abnormally thick. Under the posterior flap of the mitral valve the endocardium was thickened, and the trabeculæ were thin and atrophic. The posterior papillary muscles were wasted. Fibrous tissue replaced the muscle for a depth of 2 mm. This area of fibrosis involved the upper part of the posterior wall of the left ventricle and extended forwards into the posterior part of the interventricular septum so that it encroached upon the left branch of the bundle of His. The coronary arteries were calcified in places, the circumflex branch of the left coronary and the posterior part of the right being the most severely affected. Both arteries, however, had their main channels patent. There was a patch of thickened pericardium over the area of infarction at the back of the left ventricle.

CASE 6.—A man, aged 41, had an attack of breathlessness when walking in the street. He was quite overcome and had to keep to his bed after it for some days. After a little he recovered fairly well and was able to get about again. Then gradually the breathlessness on the least exertion came back. When seen he was obviously far gone in heart failure. The condition was in striking contrast to his appearance eight months before, when he had been successfully treated for gastric ulcer. The heart was greatly enlarged, with a wavy, heaving apex-beat. A clear gallop rhythm, due to reduplication of the mitral first sound, could be heard at the apex. There was severe venous engorgement. Under treatment with large doses of digitalis he got rather better and insisted on leaving hospital. In a month he was back with thrombosis of the right subclavian and jugular veins, and his heart was worse than ever. On this occasion it was possible to take an electrocardiogram. This showed small complexes in all leads, absence of the T wave in the first lead, with very small indefinite T waves in the other two. Frequent extrasystoles came from several foci in both ventricles.

The Wassermann reaction was negative.

The diagnosis was thrombosis of the coronary arteries and myocardial infarction.

He gradually got worse and died, about six months after the onset of the symptoms.

Post mortem there was a very large heart with a patch of thickening of the pericardium over the left ventricle in front. Here the wall was very thin, and on opening the chamber a large area of infarction was revealed. This involved most of the front of the left surface of the interventricular septum and a good deal of the front of the left ventricle itself. The descending branch of the left coronary artery was blocked by an old thrombus just at its origin. At this point there was a small atheromatous patch. The obstruction was not more than a centimetre long, and obviously canalised, as it was easy to demonstrate that blood could be squeezed through small holes in the obstruction. Elsewhere there was very little atheroma. The changes of chronic venous engorgement were intense. The right subclavian and innominate veins were thrombosed, and there were sundry infarcts in the lungs.

CASE 7.—A professional man of 68 was walking in his garden when a sudden shortness of breath overcame him, so that he collapsed and seemed for the time as though dying. Before this he had been active and had played golf a good deal, doing rather more than usual for his age. After the attack he could not leave his bed. The dyspnœa continued so that he had to keep sitting up, and was really most comfortable in a chair. When seen a fortnight after the attack he looked blue, the legs were swollen, and the liver large. The heart beat at 84, with many extrasystoles. The radial was rather tortuous, the blood pressure 125/70. Over the heart, which was a good deal enlarged to the left, the mitral first sound was faint, and then reduplicated, so that a gallop rhythm was heard. Under fairly large doses of digitalis and diuretin he made progress and is now a good deal better.

There can be little doubt that in this case myocardial infarction led to this sudden and severe failure of the heart, the chief symptom of which was dyspnœa, without anginal pain at any time.

CASE 8.—A business man of 65 felt rather cold one evening, and retired to bed. When lying quietly, talking, he suddenly sat up with a cry, and fell back dead. Before this he had not been looking well for some months, and for the last five months had complained of getting tired very easily. Every day he had walked up a considerable hill on his return from business. Angina he had never had, neither was he troubled with dyspnœa to any degree. He had not consulted a doctor for five years.

Post mortem there was an area of infarction in the upper part of the front of the left ventricle. It was old and well organised, and had evidently been there for months. Thrombosis had occurred in the descending branch of the left coronary artery, but small canaliculi were easily seen in the obstruction where the thrombus had been. The heart was very large, 26 oz., with dilated capacious chambers. In the aorta there was much soft atheroma, the radial was thick and tortuous, and the kidneys rather granular. It is probable that he had high blood pressure. The striking point here is the negative history, there being neither angina nor dyspnœa coming in an attack, nor the gradual onset of heart failure. Yet the lesion was a large one, of some considerable standing.

Discussion.

Parkinson and Bedford,[1] in their account of cardiac infarction, include a type with dyspnœa and failure but without pain, which may be found when infarction supervenes in a patient with pre-existing signs and symptoms of heart failure. Two out of their 100 cases were of this type. Gibson,[2] out of 43 cases verified by post-mortem examination collected from the literature, has a group of six patients with chronic heart failure in whom dyspnœa was a prominent symptom. J. Cowan, quoted by Gibson, referred to two cases in which there was a sudden onset of dyspnœa, but in one there was a coexisting parenchymatous nephritis, while the other subsequently developed pain. Coombs [3] had a case in which there was a sudden onset thought to be due to influenza, and death occurred in three months from heart failure. Wearn,[4] on the other hand, found dyspnœa to be prominent in 16 out of the 19 cases of infarction studied by him. It was the predominant sign and chief complaint in four of these patients who had no previous signs of cardiac failure, and was so severe that it was out of proportion to the other findings in the heart and lungs.

Six of our cases are clinically very similar. They all had a sudden attack of severe dyspnœa associated with heart failure. Recovery from this illness took place to a greater or lesser extent, but in no case was the patient ever the same as he was before the attack. In three the recovery was rapid and fairly complete; in the others it was the prelude only to a slowly progressive and fatal heart failure. The physical signs were such as have been described after cardiac infarction accompanied by pain. There was enlargement of the heart to the left, and a form of gallop rhythm at the apex. Five cases had frequent extrasystoles. In three instances the electrocardiogram showed that they were arising from the region of the heart in which the infarct was subsequently found. In the third case the polygram demonstrated the presence of pulsus alternans. Case 3 was seen four years after the probable date of his initial attack, at a time when he was not suffering from any cardiac embarrassment; his death was not primarily due to heart failure.

It appears, therefore, that cardiac infarction may occur in an apparently healthy individual, entirely unaccompanied by pain. It should be suspected as the cause of an attack characterised by the sudden onset of severe dyspnœa with heart failure, when no other reason can be found. The signs of failure may

disappear fairly soon, but some permanent disability is always left.

We are much indebted to Dr. F. B. Smith, pathologist to the Harrogate Infirmary, for the post-mortem notes of Cases 1 and 3, and for his care in preparing the photographs; and to Dr. Raymond Crawfurd for permission to include Case 4.

References.—1. Parkinson, J. and Bedford, D. E.: THE LANCET, 1928, i., 3. 2. Gibson, A. G.: Ibid., 1925, ii., 1270. 3. Coombs, C. F., and Hadfield, G.: Ibid., 1926, i., 14. 4. Wearn, J. T.: Amer. Jour. Med. Sci., 1923, clxv., 250.

RADIOLOGY AND SURGERY IN CANCER OF THE BREAST

AND IN "CHRONIC MASTITIS."

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ANALYSIS of 600 cases of breast cancer, treated with X rays or radium, and 60 cases of "chronic mastitis," treated with X rays, suggests that both in the prevention and cure of cancer of the breast radiological measures could be employed with advantage much more extensively than they are at present. Their use is almost entirely restricted now to practically hopeless patients with inoperable primary or recurrent disease, as it was for so long in cancer of the uterus, and there is little recognition of the unique effect of radiation (1) in rendering cases on the borderline of operability operable, (2) in sterilising the operation area so that so-called "recurrences" are less likely to take place, (3) in being a complete method in itself leading to cure in a proportion of early and even advanced stages of breast cancer, and (4) in its almost invariable success in the precancerous "chronic mastitis."

"Recurrence" and Preoperative Radiation.

If in all clinically early patients the malignant disease were localised in the breast substance, the percentage of surgical success would be 100 per cent. That the results as a whole are much poorer than this shows that in no given patient can the limitation to the breast be affirmed with absolute certainty. John Fraser has shown with whole-breast sections what widespread changes may occur with a small apparently early tumour; and for many patients we must fear, as Sir Lenthal Cheatle has said, that "when a lump appears in carcinoma the disease is well advanced."

When the second stage with palpable axillary nodes is reached, we may only reasonably expect from purely surgical intervention a 1 in 25 chance of saving life. Many sets of statistics support this conclusion of James Ewing. In these more advanced cases life may be prolonged for many years by surgical measures, but surgical statistics do not show what happens in the large proportion of interventions in which operation is incomplete. If the operation is gravely incomplete it may be followed by rapid widespread local or general recurrences within a few months, as I have seen in about ten patients who had had no radiation. It is such patients that suggest that there may be a "growth-restraint" exercised by the primary focus, the removal of which, with its possible growth-restraining hormones, leads to rapid new growth in the residue of cells. Alternatively these cases suggest that the knife, cutting across infected tissues and setting free live cancer cells, has stimulated their growth-activity—as incision is one of the best means of stimulating an animal tumour's growth (W. E. Gye). (Claude Regaud and James Heyman have shown in the tongue and cervix respectively that diagnostic incisions are contraindicated, as they make the end-results worse.)

In view of the large body of pathological and clinical evidence as to the partial or complete sterilising effect of radiation on malignant cells, a widespread preoperative use might well be made of X rays or radium to sterilise the operation field as far as is practicable. Very little advantage has, however, been taken of this means, which seems not far from ideal for the purpose. All that I have been able to find advanced in opposition to a general use of preoperative radiation is (1) that it is an uncertain and insufficient measure (F. C. Wood is against it because, on the basis of some animal experiments and contrary to a vast body of clinical experience, he asserts that a four or five skin-erythema dose is necessary to destroy breast cancer cells); (2) that its use delays the healing of the skin incision—N. S. Finzi has noted cases where this has happened; and (3) that radiation may stimulate the growth, as Sir Holburt Waring concludes from one case where a patchy redness and skin nodules appeared a fortnight after one X ray application. But the very existence of a stimulation dose is wholly denied by many radiologists of great experience (Guido Holzknecht, Heyman). A moderate surface application should not interfere with the healing of well-nourished skin-flaps, as has been shown by several of my own preoperative cases. While surface radiation cannot be relied on to cure with one application or set of applications a large tumour occupying most of the breast substance, it can be relied on with a great measure of probability to render no longer viable isolated groups of cells in lymph nodes and channels, and, in short, to sterilise the dangerous outlying field of the operation, when a movable small breast tumour has not already advanced beyond the early stage of axillary invasion. I have had about ten preoperative patients whose operation took place from three days to some months after the X ray application; in none of them was there faulty skin-healing of the scar. The cases were clinically so diverse that it is difficult to draw more conclusions than that (1) operation-scar healing is not delayed when the dose is adequate but not excessive; (2) some Stage I.–II. cases show three-year freedom from recurrence with preoperative and no post-operative radiation; and (3) some Stage II.–III. cases were made operable, and showed no local recurrence, although some died of metastases.

B. J. Lee and R. E. Herendeen have reported results with 92 patients showing the percentages alive and well in three years: after surgery alone, 24 per cent.; after post-operative radiation, 39 per cent.; and in those who had both pre- and post-operative radiation, 52 per cent. This illustrates the advantages of a combined method over surgical removal alone. They advise operation three or four weeks after the X rays; if it is performed earlier there may be hyperæmia. Neumann, F. Sluys and Coryn report good results from a rather similar combined technique (40 cases).

Radiation after Recurrence.

When "recurrence" has taken place, the results of X ray or radium treatment differ greatly according to the factors (some still undetermined) of site, type of growth, state of the patient, and method of radiation employed. The earliest noted "recurrences," those of pea or millet-seed size in or near the line of the scar, almost invariably disappear after surface X rays or radium. Larger nodes frequently become no longer palpable, or leave a small residue, after surface radiation with or without buried radium. My three-year "cure" of major recurrences, mostly supraclavicular or intercostal, on 165 cases with deep X rays or radium, is 22 per cent. One illustrative case may be summarised:—

CASE 1.—Aged 46; radical operation elsewhere, June, 1923. No post-operative X rays. By October, 1924, a massive scar recurrence, roughly 4 by 2 inches, and a ¼ inch thick, a nodule close to the sternum, glands in both axillæ, and in the right supraclavicular triangle. One high-voltage X ray course over these areas, followed on the scar area by a well-marked reaction, Grade I. All signs of disease disappeared after this, and the patient remains in good health. As prophylactic, a gland in the opposite axilla was treated in August and October, 1926, and a doubtful recurrence, a small tender right supraclavicular gland, was treated in October, 1927. There is now no sign of disease.

For patients with as widespread recurrence as this, X ray treatment is the more suitable. For a localised recurrence, for example in one supraclavicular triangle, half a gramme and upwards of radium element has been applied in a number of patients externally. The best results appear when the radium has been applied for suberythematous doses from 6 centimetres' distance in a "double-strength" intensity. Where a change is made from radium to X rays or vice versa, owing to an insufficient result, care must be taken not to overdose, as skin damage may result, with consequent bacterial infection and renewed growth of the residue. In no breast case has lung induration or severe blood damage been a result of treatment.

Post-operative Radiation.

Because in any given patient an incomplete operation may have been performed, some surgeons make a practice of referring patients for a "prophylactic" course of X rays. Analysis of 208 cases shows what wide variations there are in the state of the patient at the time of operation, the clinical and histological type of the growth, the method of operation, and other factors. It is safe to say that local scar recurrence can be almost completely abolished when patients have a post-operative course of X rays beginning within three or four weeks at latest after the operation. But in a considerable number of patients referred later than that, and in nearly a third of all this post-operative series, early signs of local recurrence in or near the scar, or in the axillary, parasternal, or supraclavicular glands, have been found when they were examined every six or eight weeks in the following year or two years. This shows the high proportion of incomplete operations, and the need for repeated examinations in the years following operation. If this were done in all patients after operations for malignant disease the end-results would be much better, for in almost every one of these breast cases, where definite or suspicious recurrences were noted at their earliest stage, further and more active radiation to that area has been followed by the disappearance of all signs of disease. The most lamentable cases seen, perhaps, by radiologists are those where breast or cervical operations have been followed by massive and practically hopeless recurrences; had the condition been recognised months before they would almost certainly have been curable.

Where the operability rate is high, and many of the patients are in Stage II. at operation, as at the Middlesex Hospital, the results of operation followed by a medium-voltage X ray course for one or two years, as shown by Sampson Handley's and some of G. Gordon-Taylor's figures, are approximately a 47 per cent. three-year freedom from recurrence. Handley has lately shown that in his Stage I. cases, with parasternal radium insertion and post-operative X rays, there has been 85 per cent. of "cures." Where operation is admittedly incomplete—i.e., where the axilla could not be cleared completely, or "recurrence" is evident a few weeks after the operation—the value of post-operative radiation may be demonstrated perhaps most conclusively. I have had 26 of these patients, all of whom were promptly treated with high-voltage radiation to the axilla and supraclavicular triangle; eight, that is, just under a third, showed no recurrence after two years. Without radiation it is not probable that so large a percentage would remain without signs of disease. Several patients have lived for over five years after growth was left adherent to the axillary vein, or was evident in the supraclavicular triangle at the operation or within a few weeks. An illustrative case may be summarised:—

CASE 2.—Aged 49; underwent radical operation in August, 1925, by Mr. E. L. Pearce Gould; the axillary vein could not be cleared completely. Four series of high-voltage treatments to the axilla and medium-voltage to the supraclavicular and scar areas followed. In February, Mr. Pearce Gould suggested that the treatment might be stopped. By October there were enlarged supraclavicular glands, which disappeared after two high-voltage treatments.

In April, 1927, there were two recurrent nodules in the line of the scar, which by June were no longer palpable after further high-voltage treatments. The patient remains free from signs of recurrence. This case shows the advisability of high-voltage supraclavicular applications in doubtful cases at least, and the inadequacy of an *incomplete* medium voltage X ray course to prevent the appearance of secondaries in the line of the scar. The full course is two years with ten treatment courses; this patient had three only; recurrences 9 and 15 months after.

Primary Cancer of the Breast.

(1) *Inoperable.*—About one-third of all patients coming with breast cancer to surgeons come in an inoperable stage, and for these much can be done by judicious irradiation; the ulcers heal, the cutaneous and deeper nodules disappear, and the arm becomes more movable and less swollen. Some patients may be rendered operable, and for these excision by the diathermy knife is especially suitable. Of 86 advanced inoperable patients the results have been satisfactory for more than a year in only about 10 per cent., as chest and other metastases become evident in so many patients and overshadow the breast condition. It has been found impossible to estimate beforehand, without actual trial of radiation, how any given patient will respond, and for this reason it is worth while commencing the treatment of many apparently hopeless cases, as a few will be markedly benefited. S. E. Pfahler and B. P. Widmann report in their series an average duration of life of five years and one month, as against two and a half to three years in untreated cases. An inoperable case well after 11 years may be summarised:—

CASE 3.—Aged 62; sent for X ray treatment by Mr. Sampson Handley in 1917, as there were too many axillary glands for operation. In April, 1922, the right breast showed nipple retraction as it had for years, but was otherwise satisfactory; there was a rather large right axillary gland, a small hard one in the left axilla, and one in the right posterior triangle. More X ray treatment was given. Seen at intervals since, there is no sign of disease, and the patient is in very good health.

(2) *Operable.*—I have now had 20 patients with operable breast cancer treated with X rays or radium or both, in all of whom operation had been refused, or was considered inadvisable. I am satisfied that radiation is a justifiable alternative to operation, as with radiation alone the percentage of success closely approximates to surgical results, and is at present rather better. Of my operable series published two years ago[1] (excluding two cases dying of intercurrent disease, one who discontinued treatment, and the fixed ulcerated case classed as "inoperable" when she began radiation treatment), there is a 75 per cent. three-year "cure" of Stages I. and II., and a 100 per cent. "cure" of Stage I. These percentages of results with X rays and massive surface radium are similar to those of Hermann Wintz and of Pfahler in their operable series treated by X rays; as radiation results they are only likely to be equalled by radium needle insertion methods such as those of Neumann, Sluys and Coryn, and of Geoffrey Keynes.

"Chronic Mastitis."

Much attention has been drawn lately to "chronic mastitis" as a precursor of cancer, and clinical observations have been confirmed by Bagg's work on breast functional activity and on milk retention in mice after parturition, which produced cancer in a large percentage of nursing animals after duct ligature. Also the work of A. Rosenberg on the menstrual breast has important bearings on the subject (see below). Sir Lenthal Cheatle has drawn a clear picture of the comparison between the successive changes in the skin resulting from tar-painting, and the changes in the breast terminal ducts and acini of degenerative hyperplasia, cystic retention, papillomata, and final malignancy. A similar series of changes has been lately described in the colon. It is a reasonable deduction that the effective treatment

[1] THE LANCET, 1926, i., 431.

of "chronic mastitis" will, in at least some cases, prevent the appearance of carcinoma. Little is known, however, about the beneficial effect of X rays on mastitis. The literature refers only to success with acute mastitis, as with other acute inflammatory conditions, and of a number of surgical authorities consulted Handley alone has been found to recommend X rays before operation in cases not responding to simpler measures.[2]

I have had 60 of these "chronic mastitis" patients, and in over 90 per cent. the result has been perfectly satisfactory after, as a rule, about four medium or high-voltage treatments by cross-firing the breast. One or two have been operated on for large painful breasts, or for continued neuralgia-like sensations, and of those traced only one has been operated on for malignant change. This supervened a year after medium-voltage treatment to a large breast had been stopped. High voltage would have been better for such a large breast.

In this series of "chronic mastitis" were six or seven who had been sent as cases of doubtful "early carcinoma" in the larger nodules. As Ewing reports a carcinoma of 2 millimetres in size in a patient 21 years old, there may have been other cancers in the series! These results are, from all preventive points of view, noteworthy, and should be emphasised in any comprehensive campaign against cancer. It is an unfortunate tradition among patients that anything wrong with the breast probably means an operation, and I am convinced from many inquiries that the fear of operation is largely responsible for the high percentage of patients who come for treatment not in an operable stage, much less a "mastitis" stage, but in a frankly inoperable and, so far as we know as present, a practically hopeless condition.

Artificial Menopause as an Aid.

X ray castration has been recommended by several radiologists in every case of breast cancer. This procedure has recently received evidence in its favour on the histological side by Rosenberg, Polano, Berberich, Loeschke, and others. They have shown the remarkable proliferation of acini which takes place in the breast monthly and regresses in the intermenstruum. That a similar proliferation of cancerous epithelium takes place monthly has not yet been proved, as far as I know, by animal experiments. John Fraser, however, in a personal communication, writes that he has several specimens in his possession which suggest that the carcinomatous change receives a definite stimulus at the menstrual period, although he does not regard the matter as proved. I have seen patients whose recurrences were doing very well under radiation treatment suddenly flare up when menstruation began after a stoppage of some months. Such cases suggest strongly, on the clinical side, that it might be well to consider as a routine the production of an artificial menopause in all breast cancer patients who have not already reached the natural menopause. I have thus treated six advanced patients as a late resource. Advocated by Sir George Beatson, oöphorectomy has been found by Sir Holburt Waring to be of marked temporary service in about 30 per cent. of patients. As the X ray menopause can be induced in the great majority of patients in one to three hours with a minimum of disturbance, it is suggested that this is a matter which urgently requires discussion as a neglected but possibly valuable factor in the general treatment of cases, whatever local method be employed.

Conclusions.

1. It was once true, but is true no longer, that the only chance for the patient with cancer of the breast is early operation.

2. By radiological methods alone, or as the main treatment, results are being obtained in cancer of the breast similar to those in cancer of the cervix; a certain percentage of inoperable cases are cured, and the results in the operable group are rather better than those from surgery alone.

3. Combined methods of radiation and operation offer a fruitful field for further advances. The radiation artificial menopause is a little used but possibly valuable auxiliary treatment.

4. Radiological methods simulate and also encourage the natural attempt at cure, usually seen only in isolated subcutaneous nodules, by causing degeneration of the malignant cells and arousing a lymphocytic and connective tissue reaction. Experimentally, radiated areas have shown an immunity to tumour implantation; this is an additional argument in favour of pre- and post-operative radiation. The tumour bed and adjacent lymphatic glands appear to be stimulated (Douglas Quick and Max Cutler: in neck cases).

5. Operative removal is sometimes followed by the rapid growth of previously latent secondaries, possibly by loss of a "growth-restraint" of the primary (Ewing). For this reason, among others, conservative radiation methods may prove to be on the whole better, in some forms of cancer at least, than radical operation.

6. Experimentally and clinically the best way to stimulate a growth appears to be to cut into it. Clinically this has been seen in sarcomata, the inflammatory type of breast carcinoma (acute carcinoma incised by mistake for mastitis with immensely rapid growth following), and other carcinomata. (For inflammatory breast cancer radiation offers the only hope: Lee and N. E. Tannenbaum.)

7. In the hope of avoiding a considerable percentage of "recurrences" after incomplete operation, there is a very strong plea to be made out for invariable pre- and post-operative radiation of the operation area and the adjacent lymphatic drainage areas.

8. The present-day surgery of cancer may be said to be in a pre-Listerian stage. A new axiom might well be formulated and acted upon; no operations should take place on live unsterilised tumours.

9. The ideal method is for all new patients with malignant disease to be seen by the surgeon and radiologist in consultation. This was done at the Middlesex Hospital for some time by the late Mr. T. R. Kellock.[3] As a rule, however, the purely surgical view prevails, and radiotherapy is considered merely as an adjuvant to surgery—to be employed only when surgical means have failed, as surgery was once regarded by medicine. Sir Henry Gauvain has lately suggested how prejudicial to the public interest this segregation of radiological departments from the full clinical stream must be. Radiotherapy has become a new specialty of method, and there is much to be said in favour of giving the radiologist, as a cancer therapist primarily, a status of real equality with his other hospital colleagues, and the charge of a department with out-patients and beds, like that planned for Prof. Gösta Forssell in Stockholm—a 50-bed clinic in the new Serafimer Hospital.

If the voluntary hospitals, with their many other commitments, can make no full provision for advanced X ray and radium therapy in cancer, it is to be hoped that the Ministry of Health will initiate or support any movement for cancer clinics throughout the country (as in France) where the possibilities of radiotherapy may be fully explored. The annual mortality from breast cancer is about 5000, a thousand more than ten years ago in England, and surgical technique has been perfected for so many years now that there is not likely to be much lessening of the mortality unless expert radiological methods are more extensively employed than they are at present.

[2] See Choyce's Surgery, second edition, 1923, ii., 28.

[3] THE LANCET, 1922, i., 552.

NEW BRIXHAM HOSPITAL.—Earl Fortescue, Lord Lieutenant of Devon, has opened a new hospital at Brixham, the gift of Mr. Charles Hellyer. There are 12 beds and two cots equally divided between the male and the female sides, and four private wards.

THE SACRO-ILIAC PROBLEM.

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WHETHER or not the sacro-iliac joint is ever liable to disabling displacements in the absence of severe trauma has been the subject of much discussion from time to time. Warm support has been given to the claim that manipulation, with or without strapping, cures or rapidly alleviates the distressing symptoms. These same claims have been equally warmly rejected. In the group of cases which form the subject of this report three factors have been constantly present.

(*a*) A history of relatively sudden onset of pain in the back following a muscular movement of the "surprise" type, and quite insufficient to cause a dislocation of a joint the size of the sacro-iliac synchondrosis.

(*b*) An inability to cough without pain and without accentuating all symptoms.

(*c*) A complete inability (not necessarily on account of pain) to lie flat on the back and lift both legs (when separated by about six inches) simultaneously off the ground with the knees fully extended.

All the patients have been more uncomfortable in a sitting position, or when passing from this to standing, than when fully erect. The majority also have been unable to roll in bed towards the affected side without a spasm of radiating pain.

A medical man who has suffered from this distressing condition described his history and symptoms to me in detail as follows:—

"At the time of the onset I was just recovering from a rather prolonged and debilitating attack of bronchitis. One morning, when sitting at stool, I was seized with a more than usually severe bout of coughing and suddenly 'felt something give' in the region of the left sacro-iliac joint. There was no pain. Nor was there any pain to speak of on first standing, only a vague discomfort. Very shortly after I bent to pick up a small bag, weighing a few pounds, and my return to the standing position was accompanied by an almost intolerable hot and stabbing pain which radiated down from the original spot to the back of the knee and left the whole of the back of the left thigh with a woolly, heavy feeling. Walking was not painful, only uncomfortable, and a limp did not develop until later. Work and duty could be carried out, though with a sense of insecurity. After some two weeks of this condition the stabbing attacks disappeared, leaving a continuous 'lumbago' backache with the whole of the left leg feeling heavy and somewhat unmanageable. At this stage the ilium, where it abuts on the sacro-iliac joint, felt more 'lumpy' than on the unaffected side. I was told, though personally I was unaware of it, that my trunk was no longer erect, but bent forward and to the left. The nearest approach to a comfortable position was standing with the left leg behind and the shoulders thrown back. Diathermy, ionisation, ultra-violet light, and radiant heat gave only temporary benefit."

When examining this patient I noticed for the first time a curious sign—namely, that while he could lie on his back and lift each leg with the knee straight without difficulty or pain, he appeared to have absolutely no power to lift both legs together. It was not a question of impending pain; he simply might have been paralysed for this particular movement. Passive movements without an anæsthetic, radiant heat, and strapping effected a reasonably rapid recovery.

Since then I have come to recognise that the double-leg-lifting test is important in distinguishing one group of "backache" cases from all others. It has been possible to collect a considerable number of these cases, both in hospital and private practice, and they all conform so closely to the first that it will be sufficient to give brief notes of two or three.

CASE 1.—A man, aged 26, was in a motor collision on May 4th, 1927, but was not turned over or thrown out; he thinks he swung suddenly to save himself from impact. He complains of pain deep in the left flank. Coughing hurts and shoots pain down the distribution of the left sciatic nerve. X rays show no bony injury or abnormality. On examination, single-leg-lifting is difficult, but can be carried out. Attempted double-leg-lifting produces no movement whatever of either leg—"no pain, just can't do it." Gripping the iliac crests, so as to close them up, immediately makes it possible to commence this movement. Pressing the iliac crests apart produces the same pain as coughing.

Treatment.—Absolute rest in bed, anodal galvanism, massage, movements, and gradual re-education effected complete recovery for general office work in three to four weeks, but a ban was put on rowing races.

CASE 2.—A married woman, aged 54, tried to lift a bed on Dec. 5th, 1927. Two or three hours later she noticed pain low down on the left side of the back. Sneezing and coughing were most painful; in some positions—e.g., getting in or out of a bath—acute pain radiated over the buttock. Rest in bed, ionisation, massage, and hot baths for a week did no good. When seen on Dec. 15th examination was very difficult on account of rolls of loose fat all round the loin, &c. Double-leg-lifting was, however, impossible and separating the iliac crests made any effort to raise the legs more difficult, while closing them made it possible to move the legs slightly.

Treatment.—Direct current was administered and the patient wore a corset with a pad of wool while resting in bed, with a pillow under the buttock. Massage was given, at first avoiding all passive movement. By Christmas Day the patient was well enough to go into the country and recovery was uninterrupted.

CASE 3.—An unmarried woman, aged 42, complained of pain in her back six and a half years ago. This definitely began after lifting a child aged 4 and running with her; she "felt something go" on the left of the spine, and has felt pain at intervals ever since. "I may go for weeks and months without discomfort, then a slight something sends a stab of pain down the left of my back and for a time after this any movement causes excruciating pain." When seen on March 7th, 1927, she stated that while changing her frock for dinner she had felt something click, with slight pain which afterwards gradually increased until at 9 A.M. she was completely incapacitated. Double-leg-lifting was impossible. Single-leg-lifting caused no difficulty and there was very little difference between the sound (right) side and the painful side.

Treatment.—Strapping, accompanied by Bristow coil treatment to all the muscles in the region of the left sacro-iliac joint, rapidly made the patient well, and by learning how to use the apparatus on herself she has been able to keep well.

The next case illustrates another aspect of this interesting group.

CASE 4.—A woman, aged 38, on trying to stand on her hands in January, 1924, "ricked her back" and ricked it again the same evening while dancing; this was followed immediately by pain in the back, made worse by any forward-bending movement. Coughing was painful except in the full knee-bend position, and pain could be diminished by holding something in front of her (in effect fixing the ribs, see later). On April 2nd, 1925, she caught a "chill" in church and then the pain returned, only worse, and went down the legs in a spasm. A celluloid corset, partially immobilising the sacro-iliac joints, was a great help.

CASE 5.—A man, aged 22, strained his back wheeling a barrow in June, 1927. There was no slip or sudden emergency and he went on working after the pain began. He got well, but when skipping in September, 1927, the pain returned down the right leg and was also felt on sitting or coughing. On Dec. 20th, when first seen by me, this pain was still present and prevented all games. The X rays were normal. The double-leg-lifting sign was present and hypertension of the thighs relieved the pain. In the forward-lying position the iliac side of the sacro-iliac joint on the affected side appeared to project more prominently than on the healthy side. As this asymmetry largely disappeared after treatment, it is worth noticing, particularly as it has been noted in other cases. Treatment was carried out, as described below for the more severe and long-standing cases, and recovery has proceeded satisfactorily.

CASE 6.—A woman. The original injury was caused by turning to the left and leaning over to lift a coal scuttle; the right foot slipped on some grease and a feeling of something that "went" in her back was followed some days later by a disabling pain in the back and down the left thigh. In this case, rest in bed, strapping, and jacket only effected temporary improvement. On examination in the forward-lying position the sacro-iliac joint on the injured side was so loose that Mr. J. Cunning considered it justifiable, after all other methods had failed, to fix a screw through the joint. This he carried out successfully on Jan. 17th, 1923, and the patient was able to resume her duties as cook-general and has carried on successfully ever since. An X ray of the sacrum taken on Feb. 14th, 1923, by Dr. Bertram Shires showed the screw in its original position.

Any anatomical theory to fit the common factors in these cases must take into consideration :—

(*a*) The comparatively minor nature of the original trauma.

(*b*) The pain on coughing.

(*c*) The pain in the back that tends to radiate either down the sciatic nerve, over the buttock, or towards the groin.

(*d*) The eccentricities of posture and movement that produce pain, including visceral discomfort.

(*e*) The relief brought by manipulation, strapping, &c.

(*f*) The mechanics that bring about the inability of the patient to lift both legs when lying flat.

I sought the assistance of Prof. Lucas-Keene in the Anatomical Department of the School of Medicine for Women, and am indebted to her for the following hypothesis :—

"That the original injury is a comparatively minor tear of the inner portion of the quadratus lumborum muscle and of its anterior fascial covering commencing from the point where it becomes continuous with the ilio-lumbar ligament as this stretches, from the tip of the transverse process of the last lumbar vertebra, almost horizontally outwards to the inner lip of the iliac crest."

It is only necessary to glance at a dissection at that part of the quadratus lumborum which lies near the transverse process of the fifth lumbar vertebra to realise that a surprise contraction in an asymmetrical position might cause a tear more easily and with less force than in the well-recognised rupture of the plantaris muscle. Pain on coughing would, with such an injury, be a certainty, as this muscle must go into firm "holding" contraction to fix the lower ribs so that the diaphragm may carry out the movements of coughing, and any pull on the external arcuate ligament would be directly conveyed to the quadratus lumborum. Both the fourth and fifth lumbar roots of the lumbo-sacral plexus are in immediate anterior relationship to the quadratus lumborum, and any effusion, such as would accompany a tear, would be bound, particularly in changing postures, to give rise to curious "freak" symptoms and pain radiating down the sciatic nerve distribution.

Whether extension centrally of a tear of the fascial covering of the quadratus lumborum where this becomes continuous with the lumbar fascia could satisfactorily account for the frequent association of a variety of visceral symptoms in the chronic cases must be left for future investigation. It is sufficient to note that there is anatomical proximity between the inner border of quadratus lumborum and the sympathetic fibres passing to join the lumbo-sacral nerve roots. Finally, if we turn to Sherrington's works on postural tonus we can see why the uninjured ilio-psoas muscles can individually work and flex each thigh singly, but cannot do so when the more coördinated mechanism of double-leg-lifting is required. This necessitates balanced postural tonus in both quadratus lumborum muscles as a preliminary to movement. I consider that this hypothesis covers the majority of the symptoms so well, and corresponds with the effective lines of treatment so closely, that it may be accepted as a simple working description of a controversial condition.

Treatment.

This naturally depends largely upon the duration and severity of the symptoms, but not a little upon the size, age, weight, and fatty covering of the patient. In heavily built patients with severe pain and complete inability to begin double-leg-lifting, rest in bed completely flat, with a pillow under the buttocks, is the first essential. If, after a period of rest accompanied by daily applications of direct current, the pain is not lessened on voluntary movement, strapping should be put on, covering a wide area from below the level of both sacro-iliac joints to two or three inches above them, and extending outwards as far as the anterior superior spines. If this strapping also fails to improve matters, some form of manipulation is necessary. For this I remove the adhesive plaster and the patient is anæsthetised on a mattress on the floor. General mobilisation movements are carried out, first with the sound limb and then with the affected one. In the ordinary lying position these are usually found to be equal and full on both sides, but in the forward-lying position hyperextension of the thigh, with the sacrum fixed, is generally less full, and it is this movement above all others that requires carrying out until it is full and free. The patient is then returned to bed and treated for two or three days as before, flat on back with a pillow under the upper part of the buttock to maintain slight hyperextension of the thighs, and with daily applications of direct current, (anode). Massage and passive movements are then commenced, and at the end of a week strapping is reapplied and the patient is allowed up, provided that the ability to begin double-leg-lifting has returned. The patient should now be warned that many weeks' care will be necessary, and a list of the movements or strains to be avoided can be given him.

In the less severe cases strapping without rest in bed sometimes effects all that is necessary, or a surprise hyperextension of the thigh in forward-lying position, without an anæsthetic, followed immediately by reapplication of strapping, is sufficient to initiate a satisfactory process of repair.

Summary.

The group of cases described may, on account of the exact similarity of signs and symptoms, be considered as being caused by one uniform anatomical injury.

A hypothesis of the possible nature of this anatomical injury is put forward which differentiates it from the ordinary cases of sacro-iliac strain or rupture of the ilio-lumbar ligament so clearly described by Mr. W. A. Cochrane,[1] and a line of treatment is suggested which is uniformly successful when the signs and symptoms are limited to those described.

Clinical and Laboratory Notes.

MALIGNANT PAPILLOMA OF THE LEFT KIDNEY IN A BOY.

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Malignant papilloma of the kidney in a boy of 11 is uncommon, and the following case has some interesting features.

An anæmic, puffy-faced boy had been suffering from an attack of (?) "nephritis," which started with headache and hæmaturia in May, 1927. He gave a history of a similar previous attack in May, 1926, and of measles and whooping-cough in infancy. His urine in May, 1927, was deeply blood-stained, but there was no history of the passage of blood-clots nor of any vesical symptoms, and his general appearance suggested nephritis. After some days it was noted that the hæmaturia was inconstant and that the patient complained of vague hypogastric discomfort. This led to a thorough clinical investigation, and the urine on microscopical examination was found to be free of casts, but to contain red blood cells, pus cells and *Bacillus coli*. Radiographic examination showed no obvious lesion of the urinary tract, and the only clinical finding was a palpable left kidney which, however, was painless.

His condition temporarily improved, but in October, 1927, the anæmia was more marked and the hæmaturia pronounced; the urine contained red cells in large numbers and pus cells, but no casts or organisms. Examination for the tubercle bacillus was also negative. He still complained of headaches and occasional vague hypogastric discomfort, but other signs or symptoms were absent. On cystoscopic examination the bladder mucosa was found to be congested and the left ureteric orifice suggested a lesion of the left kidney; but owing to the small size of the urethra a catheterising instrument could not be passed for examination of ureters or pyelography. Abdominal palpation under the anæsthetic revealed a definitely enlarged left kidney, but

[1] A Consideration of Backache from the Orthopædic Standpoint, Edin. Med. Jour., April, 1927.

the outline appeared smooth; the right kidney could not be felt, nor could the liver or spleen. Owing to the uncertainty of the condition of the right kidney it was decided to try palliative treatment, and the boy's general condition improved, but the intermittent hæmaturia remained.

In January, 1928, another examination of the urinary tract was made. The urea-concentration test gave a third-hour concentration of 4·5 per cent. Cystoscopy showed an apparently normal bladder mucosa, but from the left ureteric orifice came regular jets of blood-stained urine, necessitating repeated refilling of the bladder; the right ureteric orifice appeared normal and had a clear efflux.

Operation.—On Feb. 2nd a left nephrectomy was done through a left ileo-lumbar oblique incision. Several accessory vessels had to be ligatured before delivery of the kidney, the lower two-thirds of which were apparently cystic with a few solid nodules under the capsule, particularly on the posterior surface. The ureter was double. After securing the pedicle and ureters the kidney was removed and examined macroscopically, when it was obvious that the part connected with the lower ureter was the site of a malignant papillomatous growth. In view of this the left ureter was further removed, as low down as possible, and the pedicle stump examined for possible metastasis, which was not found. The wound was sutured in the usual manner, a small tube being left in for drainage of serum.

Examination of the Kidney.—The kidney consisted of two parts: a smaller upper pole, which occupied rather less than one-third of the organ and consisted of apparently normal kidney substance, and a lower part which consisted of a central papillomatous mass surrounded by a cavity filled with blood-stained fluid, occupying the part that should have been the cortex. This lower part was separated from the normal kidney area above by a thin fibrous partition, lined on the cystic side by epithelium. The upper ureter passed to the normal kidney area and had no pelvis, but opened into two small calyces which embraced normal papillæ. The lower ureter had a small pelvis which divided into four tubes, each opening into the cystic space around the papillomatous mass. Embraced by the pelvis and its four divisions at the centre of the hilum was a mass of dense tissue with branched processes passing to the capsule. The part of this tissue nearer the hilum was covered with smooth mucosa continuous with that of the ureter and with that lining the cystic space and the under surface of the capsule; the remaining part formed a framework on which was situated the papillomatous growth. The only renal tissue present consisted of a small layer about ¼ inch thick at the junction of one of the branches of the central mass with the capsule, on the convex border of the kidney. Examination suggested that the papillomatous mass and dense framework were developed from the ureteric bud which normally gives rise to the collecting part of the kidney, and that, with the exception of the small area mentioned above, the nephrogenous tissue which normally gives rise to the secreting part of the kidney had failed to develop. Microscopical examination showed the growth to be a papillary carcinoma.

Progress after Operation.—The patient made steady progress for some days after the operation, the wound healed by first intention, no further hæmaturia occurred and the general condition improved remarkably. On Feb. 29th he complained of vague pain in the left iliac fossa and also of pain resembling left renal colic. At this time there was also a rise of temperature, but all the symptoms disappeared after an enema. On March 3rd there was vague pain in both iliac fossæ and the liver edge could be felt. On the 7th the liver edge was lower and the pulse-rate increasing; radiogram showed free excursions of both sides of the diaphragm and a marked increase of the liver shadow, but no definite evidence of metastases in the chest. A leucocyte count showed 5000 per c.mm. The liver increased rapidly in size from day to day, the edge being below the umbilicus on the 12th, while on the day he died, March 14th, it occupied nearly the whole of the right iliac fossa.

Post-mortem Examination.—The liver filled practically the whole of the right side of the abdomen, and weighed 5 lb. 10 oz. It was studded throughout with secondary deposits. There was also a mass of carcinomatous tissue near the pedicle of the left kidney, while the right kidney appeared to be normal. There were, in addition, secondary deposits in the lower lobes of both lungs, in the form of projecting nodules about as large as marbles, and the bronchial and the posterior mediastinal glands were extensively involved. Microscopical examination of the secondary growths showed cells similar to the kidney tumour but with the usual tendency of carcinoma cells derived from mesothelial structures to simulate sarcomata.

The interesting features of this case are: (1) The age of the patient. (2) The condition of the left kidney. (3) The extremely rapid development of the metastases after removal of the primary growth. The case also emphasises the importance of thorough examination of all cases of hæmaturia. It is impossible to state whether in this patient the results would have been different had earlier operative treatment been adopted.

A CASE OF
THORACIC AND ABDOMINAL STREPTOTHRIX
WHICH TERMINATED SUCCESSFULLY, TOGETHER WITH A NOTE ON TREATMENT WITH AN AUTOGENOUS VACCINE.

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THE following case seems suitable to record, a recovery from a streptothrix infection of the ches or abdomen is not common. The case was treate with a vaccine, amongst other remedies, and seeme to benefit thereby.

A female, aged 24 years, whose previous history ha been good, attended a football match on the afternoo of Dec. 12th, 1925. The same evening she felt cold an shivery, and had attacks of vomiting all night. The nex morning she felt better, but in the evening the vomitin returned, accompanied by pains in the abdomen. Sh was seen by Dr. McIlraith late that night. The movement of the abdominal wall were good and there was no rigidity but slight tenderness was found in the left iliac fossa. O rectal examination no tenderness or swelling could b found in the appendix region. The temperature wa 99·8° F. The pain continued, though the vomiting cease on Dec. 14th, and on the 16th a distinct swelling could b felt in the appendix region and the temperature then wa 98·8° F. in the morning and 99·2° F. in the evening. Sh was operated upon on Dec. 18th and the appendix wa removed in a state of early gangrene. All appeared to b satisfactory for ten days, but on the 28th febrile sympton developed and pain was complained of in the right lumba region. The temperature continued to rise and the pa to increase, so that on Jan. 4th, 1926, the right perinephr region was explored, but nothing abnormal was foun This was followed by steady improvement in pain an temperature until March 8th, when pains developed in th suprapubic region and the temperature rose to 101°. A condition of colon bacilluria was found and was treate by a vaccine. The pain and temperature gradually sub sided and the urine became bacillus free.

In the latter part of April she went to the seaside an while there had a recurrence of the pain in the right lumba region, accompanied by a hectic temperature. She wa brought home and, when examined, marked diminutio of movement of the right side of the chest and decide bulging of the lower ribs on that side was found. She wa seen by Dr. Herbert French in consultation with Dr McIlraith on May 17th. Dr. French explored the che and found thick blood-stained pus.

Mr. William Turner saw her for the first time on Ma 26th, and on the 28th, under a general anæsthetic, a need was put into the ninth interspace in the nipple line an blood-stained pus was found. Portions of the eighth an ninth ribs were removed and a large abscess, the size o an orange, opened in the pleura. The lower wall of th abscess cavity was dome-shaped and smooth and no com munication through the diaphragm could be found, thoug the liver dullness was definitely greater than norma Actinomycosis was suspected, and on examination of th abscess contents this was confirmed bacteriologically. Th abscess itself did well, but the temperature remained hig and there was no improvement in the general condition In the middle of July a new swelling developed in th epigastrium and over the margin of the ribs, and on th 30th Mr. Turner opened a second large abscess, which wa evidently between the liver and the diaphragm. A vacci was prepared from the contents of this abscess and injection were given every five days, starting with a 1 minim do

he strength of the vaccine was 1 mg. per c.cm. There as no apparent result save that the granulations of both peration wounds increased greatly and became very ascular. Twelve minims were injected on August 12th. id the granulations were painted with a mixture of brilliant een and methyl-violet in equal parts of a 5 per cent. lution in alcohol, and the abscess cavity was packed with rips of gauze soaked in the same solution. One c.cm. the vaccine was given on August 24th, and it was decided abandon the large doses of iodide preparations which e had been having by mouth, as during the whole of the ness no intravenous injections could be made owing to e fact that it was found impossible to distend any of e superficial veins sufficiently, and it was of course ipossible to suggest cutting down on veins for this purpose.

No progress was made up to Sept. 17th, when she was seen Sir Chartres Symonds. There was then bulging in the le behind the first operation wound and it seemed likely at another abscess was forming in this position. It was cided to continue the vaccine treatment and await rther developments. Twenty minims were given on pt. 28th and 22 minims on Oct. 1st, and on the latter te the temperature reached normal for the first time nce April, and after Oct. 7th showed no evening rise. he granulations had by this time completely disappeared, aving a healthy sinus from front to back and the swelling the side was much smaller. The vaccine was injected eekly until the end of October, and, subsequently, fortghtly. The sinus had closed by Nov. 4th and vaccine eatment was continued at monthly intervals until June, 27.

She is now in perfect health and able to carry on her ties as a masseuse.

Notes on Bacteriology by Dr. BRAXTON HICKS.

On May 28th I received from Mr. Turner some pus and ree pieces of tissue. After prolonged search through veral smears of the pus, a few filaments and one mass of reptothrix were encountered, and rapid sections of the ree pieces of tissue showed streptothrix in only one. ttempts to cultivate the streptothrix failed.

Mr. Turner asked my opinion as to the possible success an autogenous vaccine, as the patient's condition was sperate. Recovery has been recorded even with a ock actinomycotic vaccine, for the difficulty in providing autogenous vaccine arises from the inability to induce e streptothrix to grow on artificial media in every case. owever, some fresh pus having been sent by Mr. Turner July 30th, a fairly abundant growth of the streptothrix as obtained in glucose broth under anaerobic conditions Mackintosh and Fildes jar). Subcultures (fortunately xuriant) were only obtained on the first occasion, all tempts to raise a second series failing. After centrigalising down from the broth cultures, the streptothrix as washed several times in saline. The supernatant saline as removed from the last washing as far as possible to e last drop, the resultant wet mass being ground up in small sterile agate mortar. This squeezed out a certain nount more fluid, which was dried off in an oven, taking eat care not to dry out the mass completely. A slightly oist mass resulted, which could be weighed, and an original ock suspension was made up of a strength of 1 mg. per cm., of which the patient had an initial dose of 0·05 mg. August. Later on (October), in the course of the disease, e stock was increased to 4 mg. per c.cm.

In discussing the part the vaccine played in this se it must be remembered that the patient had any lines of treatment going on at the same time. I ave seen a number of cases of streptothrix infection abdominal and thoracic regions, but I do not member to have seen one clear up on iodine or dides. These always are, and should be, tried. he brilliant green and methyl-violet mixture kept e wound clean and lessened the exuberance of the anulations, but there is evidence that the vaccine inched the cure. Soon after the vaccines were arted the granulations became vascular and large, nd I think that was a sign of progress in healing, r the granulations in streptothrix are not particurly vascular. Moreover, in the latter part of eptember, a swelling was developing in the region the original operation wound. At this time the accine had been pushed up to 1 mg. of the streptorix mass and immediately after this dosage had een reached the temperature began to reach normal nd the swelling to subside. The increase in the osage was continued systematically and carefully, ntil she was taking 4 mg. of the streptothrix mass, apparently large doses are easily tolerated.

A CASE OF
POST-VACCINAL SEROUS MENINGITIS.

BY F. E. SAXBY WILLIS, *M.C.*, M.D., M.R.C.P. LOND.,
PHYSICIAN IN CHARGE OF OUT-PATIENTS, ROYAL CHEST HOSPITAL AND HAMPSTEAD GENERAL HOSPITAL.

ALTHOUGH a number of cases of encephalitis and myelo-encephalitis following vaccination have now been reported, chiefly in the French literature, meningitis in this connexion seems to be a rare complication, and the following case may therefore prove of interest.

A school-boy, aged 11, was admitted to the Weir Hospital, Balham, on May 20th, complaining of headache, pain in the neck, and drowsiness. A fortnight before admission he had been vaccinated against small-pox. A week later he had complained of headaches and pain in the neck, becoming semi-comatose two days previous to admission.

On admission he was drowsy but irritable, and could be roused. Four pustules were present on the left arm. Nothing abnormal could be found in the heart, lungs, or abdomen. In the central nervous system, apart from the drowsiness, no definite abnormality could be detected at first, but by the fifth day general hypertonus had developed and Kernig's sign was present. The knee-jerks were not obtained, the plantar response was doubtful on the right and extensor on the left. There were no ocular palsies, and the fundus occuli was normal in each eye. Fever was present (102° F. on admission, falling to normal by the third day). Lumbar puncture was performed on May 20th, and fluid withdrawn under considerable increase of pressure. The latter was reported on as follows by Dr. Mary Schuster:—

"A water-clear fluid, with little deposit after centrifugalising, cells 50 per c.mm.; small mononuclears, 65 per cent.; large mononuclears, 30 per cent.; polymorphonuclears, 5 per cent.; a few red cells; sugar diminished in amount; chlorides, 0·67 per cent. (diminished); albumin, 0·03 per cent.; organisms: cultures sterile, no tubercle bacilli found; Wassermann negative."

On May 26th considerable improvement took place, and by June 8th the patient was quite bright mentally and had no symptoms. By this date the reflexes were normal and the patient was apparently fully recovered. He was discharged on June 10th.

In my opinion the clinical features, with the definite increase in the cell content of the cerebrospinal fluid, place this case in the category of what Stiner refers to as "serous meningitis" rather than of an encephalitis.

References.—Levaditi, C., Nicolau, S., and Sanchio-Bayarri, V.: Presse Méd., 1927, xxxv., 161. Turnbull, H. M., and McIntosh, J.: Brit. Jour. Exper. Path., 1926, vii., 181. Winnicott, D. W., and Gibbs, N.: Brit. Jour. Child. Dis., 1926, xxiii., 107. Stiner: Quoted by Winnicott and Gibbs.

DONATIONS AND BEQUESTS.—Mr. and Mrs. J. B. Crichton, of Luthriebank, near Cupar, have given £10,500 to meet the cost of the upkeep of Adamson Cottage Hospital, Cupar. Mr. Crichton recently gave £5000 to the hospital. —Dr. R. Tudor Williams, who was drowned recently while bathing at Villerville, France, left the following legacies to North Wales Institutions: £500 to the Carnarvonshire and Anglesey Infirmary at Bangor, and £100 to each of the following: Llanfairfechan Nursing Association, Leeswood (Mold) Nursing Association, Caergwrle and Hope Nursing Association, Tryddyn (Mold) Nursing Association, Caergwrle Presbyterian Church, and Horeb Chapel, Llanfairfechan. —Miss Lucy Prince-Smith, Bournemouth and Staintondale, Scarborough, besides many other bequests, left £10,000 to the Royal United Kingdom Beneficent Association for general purposes, £2000 each to the Leeds General Infirmary, the Royal Victoria and West Hants Hospital, Bournemouth, the Royal National Sanatorium, Bournemouth, and the Victoria Hospital, Keighley; £500 to the Driffield Cottage Hospital, £1000 to Dr. J. Nicholson Dobie, of Keighley, and subject to certain other bequests, the residue of her property equally between the Leeds Infirmary, St. Catherine's Home, Bradford, the Royal Victoria and West Hants Hospital, Bournemouth, the Royal National Sanatorium, Bournemouth, and two other institutions.— An anonymous donor has given £1000 to the University of Manchester to be applied for general purposes as the council may determine.

Reviews and Notices of Books.

THE ROBERT JONES BIRTHDAY VOLUME.

A Collection of Surgical Essays. London: Humphrey Milford, Oxford University Press. 1928. Quarto. Pp. 446. £2 2s.

LAST week we reported the presentation of this volume at a dinner given to Sir Robert Jones by the authors of the essays contained in it, including the preface by Sir Berkeley Moynihan, and an appreciation by Sir John Lynn-Thomas. With the exception of the first article by Mr. Muirhead Little, which treats of the history of orthopædic surgery, all the essays are on clinical orthopædic subjects. The list of contributors of these, which includes five distinguished foreign specialists as well as one Canadian, is in itself evidence of the value of this volume as a serious contribution to orthopædic surgery. The editors tell us in a prefatory note that the idea of this book originated among Sir Robert's friends on the Council of the British Orthopædic Association, and that the 24 authors were selected from among his personal friends, those American and continental surgeons who had come under his influence chiefly during the war, and those British surgeons who have worked under him in the military orthopædic and pensions hospitals. A glance at the names of these writers prepares the reader for much interesting and instructive matter; it is proposed here to give in a bare outline some idea of their merits.

Prof. Osgood, of Boston, heads the list of foreign contributors with an essay on the frequent association of intestinal stasis with spinal sacro-iliac arthritis, a topic which is much thought of just now. The cases recorded fully justify the hypothesis implied in the title. Dr. Murk Jansen, of Leyden, has a reputation as a surgical pathologist which will suffer no diminution from a study of his paper on dissociation of bone growth. Prof. Putti, of Bologna, contributes a paper on two cases of tumour of the femur, which admirably exemplifies his resourcefulness and skill in bone-grafting. Prof. Nathaniel Allison, of Harvard, discusses open operations for congenital dislocation of the hip. Although he admits that manipulative reduction often gives good functional results, he prefers the security of a reconstructed acetabulum when risk of ankylosis is avoided by preserving the capsule. The same subject is dealt with by Prof. Hey Groves, who, however, is more optimistic as to the results of manipulative reduction in patients not too old. Dr. Jacques Calvé, of Berck-Plage, treats of a rare affection, infantile vertebral osteochondritis which he first described in 1924. The condition is of some importance, as it may be mistaken clinically for Pott's disease, unless radiographs are truly interpreted. This article, which is in French, is well illustrated with X ray pictures. Prof. Clarence Starr's short essay on acute infections of bone drives home the lesson that osteomyelitis should be detected and treated much earlier than is as yet usual. Mr. R. C. Elmslie's work on fibrocystic disease of bones is well known, and his words here add to our knowledge of the subject. Radiology has enormously increased our knowledge of ossification of the skeleton and its anomalies or rarities. Dr. Thurstan Holland's paper on the accessory bones of the foot conveys the results of great experience in this field, and is a valuable guide in the differential diagnosis between injury and abnormal development. Mr. Brownlow Mitchell, of Belfast, explains the mechanism of the production of spiral fractures and discusses their treatment. His X ray pictures show excellent results. The subject of peripheral nerve complications of fractures and dislocations of the elbow is an important one, for, as Mr. Harry Platt says, they may be the grounds for unfavourable criticism of the surgeon and even actions at law. The careful study of his paper should make such misfortunes rare—this is a very thorough paper. The president of the British Orthopædic Association, Mr. H. A. T. Fairbank, gives us a well-documented and reasoned essay upon infantile cervical coxa vara. Mr. McCrae Aitken writes on curvature of the spine. Mr. Rowley Bristow on cysts of the semilunar cartilages of the knee, the pathology of which he discusses thoroughly, and the same subject is touched on by Mr. S. Alwyn Smith in sidelights on knee-joint surgery. Mr. Blundell Bankart contributes a short but practical paper on dislocations of the shoulder-joint, including all its forms and ætiologies. Sir W. I. de C. Wheeler writes judiciously of bone-grafting in advanced cases of Pott's caries, and gives a table of the results in a consecutive series of 30 adults. Adult cases of Pott's disease are notorious for their high death-rate, but Sir William Wheeler only lost six of this series, one of whom, moreover, survived six years. Mr. G. R. Girdlestone's paper on arthrodesis and other operations for tuberculosis of the hip, and that of Mr. Laming Evans on astragalectomy are worthy of their position in the volume. Mr. Naughton Dunn on arthrodesis of the tarsus for foot deformities and Mr. W. H. Trethowan on fracture-dislocation of the ankle-joint deal with subjects of which they are acknowledged masters.

We have spoken with uniform praise of the contributions, and the high standard reached by them shows that all the writers considered the occasion a one in which they should put forth their best. The volume is well got up and fully illustrated, and any profits from its sale will be given to Sir Robert Jones for the funds of his scheme for the care of cripples.

HISTORY OF MEDICINE.

Storia della Medicina. By ARTURO CASTIGLIONI Professor of the History of Medicine, University of Padua. Milan: Società Editrice "Unitas." With 389 illustrations and 3 colour plates. Pp. 972.

As the standard Italian histories of medicine were published over 60 years ago, and were even then incomplete, there was obviously need for a book to carry on the story and incorporate the results of recent research. It is peculiarly appropriate that the long record of medicine should attract Italian students, for nowhere else do past and present so meet and mingle as in Italy. From the busy streets of Milan one may step into the vast Ospedale Maggiore founded in 1457 and still little changed since the seventeenth century, with its huge wards that have never lacked patients through the centuries. And in Siena it is even more striking to cross from the cathedral, with a constant stream of tourists pouring into it from luxurious motor-cars, and enter the great Hospital of Sta. Maria della Scala, founded in the eleventh century as a refuge for pilgrims as well as a hospital, where Santa Caterina laboured from day to day and S. Bernardino ministered to the victims of the plague in 1400, and where, out of an entrance hall frescoed by Sienese primitives, one passes at once into operating theatres and laboratories equipped with the latest inventions of medical science.

Of late years medical historians have been busy and have gathered a rich harvest, and now the English reader need be at no loss for information, both authoritative and attractively set forth. Italy, with her awakened energies and self-consciousness, is leaving no field untilled, and it is fitting that, from her ancient and honourable University of Padua, Prof. Arturo Castiglioni should send out this stately and well-illustrated volume, in which the history of medicine is followed down to our own time. To cover so rich a field the author has, of course, been obliged to omit much; but he has arranged his material skilfully, and the significant peaks in medical history stand out clear, and the thread of interest is continuous and absorbing.

For English readers the most useful parts of the volume will be those wherein the achievements of Italians are described with legitimate pride—especially the later chapters in which the long succession of

ought down to our own day. A carefully selected bliography is appended to each chapter, with most eful indications of the nature, scope, and value of ch book—an example greatly to be commended. ere, too, one notes with satisfaction that English oks enjoy full recognition. The book is lavishly ustrated—the subjects being very varied—although is unfortunate that the reproduction of some of these unworthy of their interest. There are thus brought gether many portraits, pictures from old books, productions of works of art, and pictures of famous spitals, among which it may be noted that the thor has fallen into the pardonable error of including hrist's Hospital.

The book may be cordially commended to all who e interested in the subject. The hopes and aims hich the author modestly puts forward in his reface are abundantly justified: "The object of this ok is not to supply a treatise in which one may ace in minute detail the development of all the anches of medical study together with the names nd lives of all the most distinguished physicians, ut rather to supply a guide to those who wish to nd their bearings in the great field of medicine and allure them to deeper and wider studies."

THE EXTRA PHARMACOPŒIA OF MARTINDALE AND WESTCOTT.

Nineteenth edition. Revised by W. HARRISON MARTINDALE, Ph.D., Ph.Ch.. F.C.S. Vol. I. London: H. K. Lewis and Co., Ltd. 1928. Pp. 1207+xxxvi. 27*s*. 6*d*.

IT is less than four years since the last edition of the xtra Pharmacopœia was issued, but in a book whose urpose it is to convey succinctly the latest and fullest formation in respect of chemistry, biochemistry, nd pharmacy as applied to therapeutics, it is not rprising that during even this period many im-ortant advances should have to be chronicled, and any additions to medical knowledge enumerated. n fact, once again the Extra Pharmacopœia has had undergo a process of thorough revision. The work ward and laboratory which has thus been sifted and mmarised, with a view to placing before the prac-tioner and the pharmacologist the latest information n drugs and therapeutic agents in a concise form, as been of large range, and the skill and industry hibited by the author will be recognised by specialists any of the individual subjects dealt with; the most asual consultation of Dr. Martindale's pages will ear this out.

The contents of the book, as our readers surely now, are arranged alphabetically, and under prac-cally every letter of the alphabet some preparation mentioned concerning which it has been found ecessary to record new scientific facts or to readjust revious judgments. Let us take, for example, the otes under the headings of colloidal metals with eference to lead; in the edition of 1924 we have a aragraph in which it is set out that large doses of ead produce poisonous effects upon embryonic cells, nd that malignant neoplasms appear to be arrested y the intravenous injection of colloidal lead. One or wo American references and a citation from THE ANCET are given. In the new edition (see p. 372 t seq) the lead treatment of malignant disease equires a page and a half of closely written matter, any references to medical literature being given, nd these are brought up to such a recent date as HE LANCET of a month ago. In view of the congress hich is being held in London next week, the informa-on on the therapeutics of lead in the treatment f cancer, carefully arranged in approximately hronological order, may be of considerable practical alue. We may compare, again, the entry in the revious edition in respect of mercurochrome with the ntry under the heading in the new volume where he necessary extension of information is still ore obvious. In 1924 a brief note stated that s a vesical antiseptic the preparation was well tolerated, and its use in gonorrhœa and ophthalmia neonatorum was mentioned with cautionary words. We have now 12 carefully written pages, setting out, with full references, the value of mercuro-chrome as an antiseptic in cystitis, pyelitis, and infections of the urinary tract, and when used intravenously in many septicæmic conditions, in articular rheumatism, and in chronic malaria. We learn how mercurochrome, introduced originally as a urinary antiseptic, has been found often to replace iodine in antiseptic surgery, and that its employment in a variety of grave infections has been considered right within the limits of safety as they are ascer-tained. The well-known purgative phenolphthalein, or "purgen," forms another example of a well-known preparation concerning which there is far more valuable information given now than was possible four years ago, and it is admirably summarised. In 1924 some two pages were sufficient to say all that there was to be said; now nine closely written pages are required.

The legal utility of the volume is illustrated by the way in which poisons are dealt with. Throughout the book we have merely to glance at the name of a drug or a chemical product to ascertain by a distinctive sign to which part of the Poison Schedule the particular poison belongs, so that questions which constantly arise for the practitioner have their answers supplied succinctly. The Dangerous Drugs Acts are presented in an abbreviated form, and the amendments effected by the regulations of 1926 are included, as are a general posological index of over 10,000 items and a résumé of the Therapeutic Sub-stances Act, 1925, and Regulations, 1927. It is certain that this remarkably handy compilation of necessary information will obtain as on previous occasions a large circulation. For ourselves its possession is a necessity.

INFECTIOUS DISEASES OF INFANCY AND CHILDHOOD.

By HENRY LARNED KEITH SHAW, M.D., Clinical Professor of Diseases of Children, Albany Medical College; Consultant in Child Hygiene, New York State Department of Health. London and New York: D. Appleton and Co. 1928. Pp 415. 16*s*.

THIS book is written not for the specialist, but for the practicing physician. Twenty-three diseases are described, including acute rheumatic fever, erythema infectiosum, glandular fever, septic sore-throat, rabies, and tetanus. All of them are not equally well considered, the chapters on poliomyelitis, epidemic cerebro-spinal fever, mumps, whooping-cough, and tetanus being perhaps the best. On the whole, the history, bacteriology, epidemiology, pathology, complications, prognosis, and treatment of each disease are discussed in detail, whereas the descriptions of symptoms, diagnosis, and differential diagnosis leave something to be desired. For example, in a chapter of 25 pages on measles, and in one of 19 pages on enteric fever, the diagnosis and differential diagnosis are disposed of in just over a page.

Dr. Shaw advocates a room temperature of about 68° F. for diphtheria, not over 70° F. for measles, 60° to 65° F. for scarlet fever, the same for whooping-cough, and about 70° F. for small-pox. It is true that he recommends plenty of fresh air, but such high temperatures will hardly permit of adequate ventilation by way of the windows at certain seasons of the year and, in our opinion, are likely to do more harm than good.

In writing of scarlet fever, he says that the straw-berry tongue is absent in measles, but on turning to the description of the latter disease we find the contradictory statement, which we can confirm, that "the tongue may show in measles a striking similarity to that of scarlet fever." In the section on differential diagnosis between rubella and scarlet fever, which is far from complete, he asserts, with misplaced confidence, that "The chain of enlarged cervical

lymph-nodes, small and not painful, and easily rolled about under the fingers, is never present in scarlet fever." The description of the chicken-pox eruption is disappointing and the diagnosis of this disease from small-pox, as set out, does not sufficiently emphasise the importance of the distribution of these eruptions. The lesions of small-pox are here stated to be uniform in size: this is not our experience, nor is the prodromal scarlatiniform rash of chicken-pox as rare as he implies. The life of the rubella rash is described as follows: "It fades, first, on the face after two or three days, and then over the rest of the body, and the entire period of the eruption does not last over three or four days." It is correct that the eruption first fades on the face, but it is unusual for it to persist there even for two days, or for the eruption to remain on any part of the skin surface more than 72 hours after its appearance. Dr. Shaw tells us death is almost certain in septic or malignant cases of scarlet fever. That death is almost certain in malignant scarlet fever all will admit, but though the fatality rate is high, recoveries from the septic form are not uncommon.

These small criticisms are called for in case of a further edition appearing, but on the whole the information supplied is reliable and clearly presented, while the book gives in convenient compass much information of interest to the practitioner. It is well printed, beautifully proportioned, and sufficiently illustrated. Three coloured plates show the Dick reaction, the Schick reaction, and diphtheria membrane. These are all very good, and the illustrations of severe pharyngeal diphtheria and typical tonsillar diphtheria are particularly worthy of praise.

An interesting introductory chapter is supplied by Dr. Edward S. Godfrey, Director of the Division of Communicable Diseases, on the responsibility of the attending physician in cases of communicable diseases, and the chapter on tuberculosis in children is by Dr. William E. Lawson, physician-in-charge, Albany Hospital Tuberculosis Sanatarium.

MEAT INSPECTION.

The Principles and Practice of Meat Inspection. By GERALD LEIGHTON, O.B.E., M.D., D.Sc., F.R.S.E., Medical Officer (Foods), Scottish Board of Health. London: W. Hodge and Co. 1927. 25*s*.

THE book is divided into two parts: Part I. dealing with General Principles, and Part II. with Regional and Special Meat Inspection. Part I. includes accounts of methods of inspection, of meat and its characters, of the lymphatic system, and of the general pathology, parasitology, and bacteriology of meat inspection, with chapters on Abattoirs and Slaughter-houses and on Methods of Slaughtering, the latter taking up no less than 34 pages. The last chapter in Part I. is entitled Judgment and Condemnation, and it is unfortunate that its ten pages should be confined to the Scottish instructions and the English recommendations. This chapter might have been amplified with advantage and have included a discussion of the scientific grounds for these official recommendations, since many difficulties arise in practice and the subject is of great importance.

Part II. is a clear and valuable account of the different abnormal conditions which may be found. The arrangement is a little difficult to follow, since one chapter deals with one disease (tuberculosis), the next with diseases in one animal (swine), while of the following chapters some deal with special organs and others with special regions (thorax and abdomen). Thus tuberculosis of the pig is discussed in one chapter while paragraphs on tuberculosis of swine are found elsewhere. Two useful sections are devoted to edible fish and inspection of fish, while notes on inspection of game and poultry are also included. The term "meat inspection" in this volume is used in a very limited sense. Very little is said about the characteristics and inspection of imported meat; the large and important subject o made-up meat foods is entirely ignored, while referenc to canned foods is confined to a quotation from a American paper on the examination of spoiled canne foods, which is mainly a discussion of laboratory methods and gives no help in practical inspection work

The book is for the most part a guide for the mea inspector working in public abattoirs or slaughter houses. Good advice is given for the detection of gross pathological lesions, but while this is the mos important aspect of the practical work of an inspecto the value of the microscope and of other auxiliary methods of investigation deserve his attention. Such methods stimulate interest, advance knowledge, and supply additional proof in cases which come before the courts. The author does point out that "a standard text-book on bacteriology should alway find a place on the meat inspector's book-shelf," bu he does not emphasise the fact that the trouble o taking it down from the shelf and studying it will b rewarded. The illustrations are numerous and fo the most part excellent.

BIRTH CONTROL.

Some More Medical Views on Birth Control. B Eleven Contributors. Edited by NORMAN HAIRE Ch.M., M.B. London: Cecil Palmer. 1928 Pp. 239. 7*s*. 6*d*.

Medical Help on Birth Control. By Fourteen Cor tributors. London: G. P. Putnam's Sons. 1928 Pp. 225. 6*s*.

Parenthood: Design or Accident? By MICHAE FIELDING. London: Labour Publishing Company 1928. Pp. 96. 2*s*. 6*d*.

The Night Hoers. By ANTHONY LUDOVIC London: Herbert Jenkins, Ltd. 1928. Pp. 28 7*s*. 6*d*.

THE first of these books is produced as a counte to a book, edited by Sir James Marchant, and reviewe in THE LANCET, 1927, i., 1165, the tone of whic was unfavourable to the practice of birth contro Dr. Haire points out that not one of the eight co tributors to Sir James Marchant's book appeared t have had any considerable experience of contra ceptive practice. He also states that the averag age of these eight contributors is 62, and sugges that their views may not be representative of th medical profession—particularly of its young elements—as it exists to-day. The second book offered to the public in response to the statemen recently published in the *Church Times*—viz., "th public has a right to expect better guidance fro doctors than it gets at present in this matter." Bot books, therefore, consist of a collection of essa written, with two exceptions, by medical men women favourably disposed to the practice of co traception. They are intended for the general publi Comparatively little is said about the purely medic aspects of this question. Religious, ethical, an sociological arguments, most of which have bee used before, are advanced with a considerab amount of repetition. To those acquainted with th literature of the subject, the most interesting essa is that appearing in the second book, by Mr. Warren Dawson, entitled "Early Ideas upon Conception an Contraception." This contributor adduces ne evidence as to the practice of contraception by th early Egyptians. A novel point of view is that pr pounded in the first volume by Dr. M. D. Ede writing upon the subject of the psychology of bir control. This essay does not contain, as might ha been hoped, an account of the psychological effec of the various contraceptive practices upon differe people. It is concerned with an exposition of th psycho-analytic theory of why people appro or disapprove of birth control. According this theory, people disapprove of it because th are animated by "life instincts." And peo

pprove of birth control because they are dominated y ego-instincts. No suggestion is made as to why ne instinct should predominate over the other in a iven individual, and the remedy proposed by Dr. Ider as a solution of the conflict may strike the reader s banal. "Education," it is said, "is the weapon ith which such opposition is to be fought." While oth books may well be of interest to lay readers, does not seem likely that they will prove very nformative to members of the medical profession.

This statement, however, does not hold of the hird book under review. The author of "Parent-ood: Design or Accident?" is a medical man writing nder a pseudonym, and the book fulfils a real need. he author clearly has had considerable experience of ontraceptive methods, and his little book is compact nd relevant. Its most valuable feature is the omparative treatment of the indications for the use f different contraceptive methods, and this book ay be recommended as containing one of the most mpartial and balanced discussions of the practical nd technical aspects of birth control that has yet ppeared from the pen of a medical writer.

The standpoint from which the last book of the eries is written, and also the motive which inspired he author to write it, are summarised in the following entence of the preface:—

"From the correspondence that has been printed in the arious London journals during the last two or three years, would appear that there is a large body of public opinion this country which, although not resting on the foundation f any religious orthodoxy, is strongly opposed to birth ontrol, and it is partly with the view of providing those who epresent this body of opinion with as complete a statement s possible of the case against the new teaching, and also of iving them an alternative solution, that this work was ndertaken."

rom the outset, therefore, the book compels ttention. The criticisms of birth control here dvanced do not emanate from a theological assump-ion as to the nature of God's will, nor from a biological ogmatisation as to what is and is not "natural." hey emerge from certain sociological, psychological, nd medical considerations for which much interesting vidence is adduced. The essential thesis of the ook is the contention that by modern contraceptive ethods good stocks are eliminated as much as, r even more than, bad ones. The reduction of he birth-rate is achieved at the expense of valuable, ather than of useless, strains. The selection is lind. Birth control is a process of night-hoeing, in hich the wheat is likely to be cut down with the ares. The author argues that the problems of over-opulation and degeneracy are intimately linked with ne another, and that any reduction of the population hich, in the future, may prove necessary should rst and foremost be a purgation of degenerates. nd the author outlines a policy to guide us in such a urgation. Of the books written in recent years gainst the practice of birth control this is by far he best. The author has been at pains to acquaint imself with the voluminous literature which the ubject has now acquired, and he writes with a enchant lucidity which makes his book a pleasure o read.

N Approach to Winged Flight.

By John D. Batten, M.A. Brighton: Dolphin Press. With photographs. Pp. 78. 5*s*.

This little book contains much new and original nformation and is illustrated by eleven photographs nd ten line drawings which render the exposition lear. Mr. Batten begins by pointing out the essential ifference between the flight of insects and that of irds, it being the latter with which his experiments re concerned. In many birds, especially the larger irds such as the albatross and the condor, flight is tained by keeping the wings almost stationary on he principle of gliders. This suggests that the ectorales majores exert almost entirely a *postural tivity*, their function being to keep the wings from flapping upwards, just as the chief function of the quadriceps extensor is, not to extend the knee, but to keep the knee from bending. Mr. Batten has found that a twisted skein of natural silk, as obtained from the cocoon, forms an exceedingly strong and light spring to maintain the wings of his model horizontal. A four-skein torse of 23 in. span twisted by a rod or lever in the middle will sustain a boy "weighing 8 st. 2 lb. hanging by his hands 2 ft. 6 in. out along the lever" which is then horizontal. If desired the mere weight of the man could maintain the wings horizontal, but this appears to be more than is required.

In the tentative model (Photos. VI. and VII.) the man's hands grasp two levers controlling the two wings while his feet rest on a firm base board. When his knees are slightly flexed, the wings are horizontal, by pulling against the base board and extending his knees, as in rowing, the wings are depressed, and on bending his knees and relaxing his muscles the wings are raised. The upward movement of the wings will occur from the fall of the body between the wings when the pressure of the air will raise them. If the rhythmic movement be in the same phase and of the same period as the oscillation period of the wings, the wings can be flapped with very little exertion and practically no fatigue. Great attention has been paid to the problem of rising easily from the ground, and also to that of landing.

The book contains valuable suggestions for all who are interested in the problem of flight.

JOURNALS.

British Journal of Children's Diseases. Vol. XXV. April–June.—Dr. C. P. Symonds contributes a critical review on encephalitis periaxilis diffusa—Schilder's encephalitis. He states that until the publication of papers by Bouman, and Collier and Greenfield in 1924 this disease was unknown except to a few neurologists. It usually occurs in children and young subjects without any obvious cause. The onset lasts a few days and the course is progressive with some remissions to a fatal issue after a duration ranging from a few months to three years. The chief early sign is cerebral blindness, which is followed by mental impairment and increasing spastic paralysis. The condition is usually bilateral but may commence on one side or be confined to one side. The disease may begin in the occipital lobes or in some other part of the brain. In several cases a familial incidence has been noted, which is in favour of an infective cause such as neuro-syphilis, or indicates inherited abiotrophy. Post-mortem examination shows areas of softening in the central white matter of the affected lobes. Histologically, there is general infiltration of the brain with round cells engaged either in the removal of myelin or the formation of glia fibrils. The vessels are surrounded with fat-laden granule cells, phagocytic cells of glial origin, and small round cells of the size and shape of lymphocytes.—In a paper on Hemiplegia associated with Extensive Nævus and Mental Defect Dr. T. Brushfield and Dr. W. Wyatt describe the pathological changes found in the cases of which they had previously related the clinical features. They conclude that the paralytic manifestations may be ascribed to the presence of intracranial nævi and the mental defects only partly to this cause, as they found a definite under-development of the neurones throughout the brain.—Dr. Eric Pritchard reports an Atypical Case of Achondroplasia, illustrated by skiagrams, and comparable to the atypical forms found in animals such as pug dogs.—Dr. Kaj. H. Baagoë, of Copenhagen, records his Investigations on the Pirquet and Wassermann Reactions in Asthmatic Children. From examination of 83 asthmatic children, aged from 2 to 15 years, he found that a positive Pirquet reaction was not more frequent than among ordinary hospital children, thus confirming Wallgreen's view that there is no ætiological connexion

between hypersensitiveness to tuberculin and asthma. Examination of the Wassermann reaction in 92 asthmatic children showed that it was invariably negative with the exception of a child suffering from syphilis acquired at the age of 1 year. Baagoë's investigations therefore do not support the view that syphilis plays any part in the development of asthma. —Dr. Robert Hutchison reports a case of Severe Anæmia Treated with Liver in a boy aged 6 years. The case was apparently an example of anæmia gravis, not pernicious anæmia. Immediate and striking improvement, however, followed administration of cooked liver.—Dr. A. Joe records a case of Gangrenous Chicken-pox associated with *B. diphtheriæ* in an infant aged 13 months, which ended fatally.—An Anomalous Case of Deafness Successfully Treated by the Electrophonoïde Method is related by Mr. Macleod Yearsley [1] in a boy aged 10, in whom the deafness was probably due to delayed development. The abstracts from current literature are devoted to diseases of the blood and spleen.

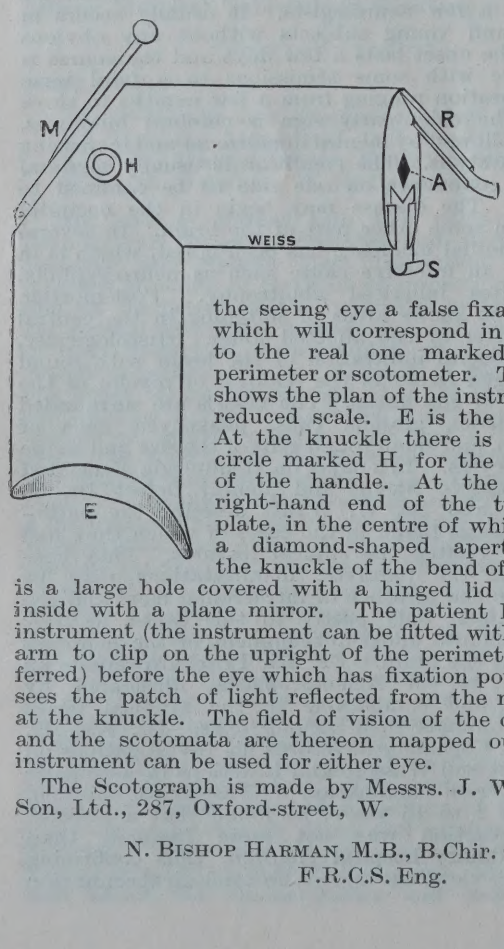
INDIAN JOURNAL OF MEDICAL RESEARCH. Vol. XV. April, 1928.—Dr. A. N. Goyle describes comparative experiments on the transmission of plague by fleas of the genus xenopsylla in which he has demonstrated the superiority of *X. cheopis* over *X. astria* as transmitters of the plague bacillus.—A. C. Craighead and S. Das give an account of a survey of Pusa Estate, the headquarters of the Imperial Department of Agriculture, for sandflies of the species *Phlebotomus argentipes*.—R. N. Chopra, J. C. Gupta, and N. N. Ghosh have studied the Indian varieties of aconite, their chemical composition and biological assay, while the senior workers with various collaborators have completed similar pharmacological studies on emetine, ephedrine, and the physical properties of different blood sera.—M. T. Bhaskara has elaborated a technique for making a fairly complete post-mortem examination through an incision in the upper abdomen.—R. McCarrison contributes papers on experimentally produced lymph-adenoid goitre and on the influence of irrigation on the nutritive value of rice.—S. S. Sokhey and M. A. Malandkar write upon the pancreatic function in sprue.—W. F. Harvey and K. R. K. Iyengar on the development, duration, and restoration of immunity.—W. C. Ross has two papers on cholera.—R. Senior-White, G. Covell, and Bruce Mayne have several contributions in connexion with malaria.—R. Knowles and B. M. Das Gupta record their laboratory studies on Surra, and H. W. Acton describes ainhum, a band scleroderma.

[1] THE LANCET, 1927, ii., 1285.

New Inventions.

THE SCOTOGRAPH.

THIS is an instrument designed to facilitate the fields of vision where there is a central scotoma. Field-taking is difficult where the macula of one eye is out of action. The device shown gets over most of these difficulties. A tube is bent at a right angle midway in its length, and the two arms are so arranged as to give the seeing eye a false fixation spot which will correspond in position to the real one marked on the perimeter or scotometer. The figure shows the plan of the instrument in reduced scale. E is the eyepiece. At the knuckle there is a double circle marked H, for the reception of the handle. At the extreme right-hand end of the tube is a plate, in the centre of which is cut a diamond-shaped aperture. At the knuckle of the bend of the tube is a large hole covered with a hinged lid M, fitted inside with a plane mirror. The patient holds the instrument (the instrument can be fitted with a crank arm to clip on the upright of the perimeter if preferred) before the eye which has fixation power. He sees the patch of light reflected from the mirror lid at the knuckle. The field of vision of the other eye and the scotomata are thereon mapped out. The instrument can be used for either eye.



The Scotograph is made by Messrs. J. Weiss and Son, Ltd., 287, Oxford-street, W.

N. BISHOP HARMAN, M.B., B.Chir. Camb., F.R.C.S. Eng.

Reports and Analytical Records.

SAVOY CIGARETTES.

(MESSRS. WIX AND SONS, LTD., 238–248, OLD-STREET, LONDON, E.C. 1.)

ON various occasions cigarettes have been placed on the market, the lip end of which is provided with some kind of filtering arrangement designed to hold back the moisture, pyridine, and solid particles resulting from the combustion of the tobacco. Such filters have had but little success, as they are found in some cases to impart a flavour to the smoke or they take out too much and render the smoke tasteless and devoid of character. Generally cigarettes are not smoked to the end, and the stump which is thrown away is about 15–18 mm. in length. This length acts as a filter during the time of smoking, and many of the products of combustion are retained therein. This length of tobacco is lost to the smoker, while brands of cigarettes with cardboard mouthpieces cannot be smoked with any pleasure right to the end as the last few draws possess a strong and unpleasant flavour.

The Savoy cigarettes are fitted with a "Styx" filter which, it is claimed, reproduces to a great extent the absorptive characteristics of a similar length of tobacco and shows a greater capacity for retaining the non-volatile particles that are not an asset to the aroma of the tobacco-smoke, and, moreover, are a source of irritation to the throat. No claim, however, is made for an increased retention of nicotine. When examined, the filter plugs are found to consist of three layers of crêped paper, which is not unduly absorptive. The paper is wound into a spiral, so that no central cavity remains through which a straight stream of smoke would impinge on the tongue. Between the layers of crêpe paper is a layer of cellulose fibre, which constitutes the true absorption medium. The crêpe paper and cellulose fibres are tasteless and odourless, and the end of the plug nearest to the tobacco is treated to render it non-inflammable. A further advantage of the filter plug is that no loose pieces of tobacco can enter the mouth.

We have carefully examined these cigarettes, and having submitted them to physical and chemical tests we find that the claims described above are justified. The cigarettes, when smoked, are cool and notably less irritating to the mucous membrane than the same cigarettes without the "Styx" filter.

THE LANCET.

LONDON: SATURDAY, JULY 14, 1928.

THE RATING OF HOSPITALS.

THE answer to a question in Parliament can be generally correct without being particularly comforting. Of this nature was Sir KINGSLEY WOOD'S reply on the subject of the assessment of voluntary hospitals. A remarkable diversity of practice has arisen. At a meeting in Brighton, reported in THE LANCET last week, it was stated that in Sheffield the hospitals received special consideration, the assessment working out at £1 per bed, whereas in Brighton the Royal Alexandra Hospital for Sick Children was assessed at £14 per bed. The sums demanded from other Brighton institutions are alarming. From the Royal Sussex County Hospital, which formerly paid £100 a year, £1600 is now asked; the Children's Hospital figure has jumped from £16 to £500, and the Eye Hospital from £17 to £100.

The Ministry of Health can state correctly that the matter lies not with the central but with the local authority, that the change is not germane to the Government's new proposals for relief of agriculture and industry, and that the hospitals have all their old powers of appeal to quarter sessions against overassessment. It is equally true, however, that the hospital's difficulties are a national phenomenon and a national concern, and that no hospital is in a hurry to spend several hundred pounds on lawyers and expert witnesses in the uncertain enterprise of challenging other experts' figures. If the present rating policy involves the bankruptcy of the voluntary hospitals, the Ministry of Health must take one side or the other. If there is no intention of overwhelming the hospitals beneath the crushing weight of rating assessments, incidents like the new Brighton demands must be checked at once. This can be done either by the specific declaration of Parliament in favour of the exemption, or at any rate the special treatment, of hospitals; or else it can be done by the administrative action of the local rate-payers who must enforce their views upon assessment committees and rating authorities. As a practical step, objection must be taken to excessive hospital assessments and proposals must be made for amendment of the list. If the assessment committee can then be persuaded to give the hospitals special consideration, the rating authority and the individual rate-payer will never have the hardihood to protest against the mitigation of the hospital's burden. In this respect the hospitals are in no different position by reason of the Rating Act of 1925. It may be admitted that, technically—thanks to the good sense of the community whose interests they serve—hospitals have in the past been under-assessed, and it was always possible for objection to be taken to the leniency with which they have been treated. But the history of English rating since the time of ELIZABETH has been that the local rate-maker, being also the local rate-payer, has succeeded in adjusting the burden to his own shoulders notwithstanding the efforts of Parliament or other bodies to interfere. There is no reason why ratepayers should not spare hospitals if they want to. The 1925 Act has indirectly produced the present crisis because it has caused a general revaluation of property. Doubtless, in many cases, experts have been called in; the experts, probably paid by scale fees on final figures, have no incentive to maintain the traditional leniency towards hospitals. But the experts and the assessment committees, like the local and central authorities themselves, exist to observe the wishes of the community. There can be little doubt that it is the general wish that the work of the hospitals should not be hampered. This general wish must be made articulate and effective.

The London hospitals are not affected by this special problem as yet. The 1925 Act did not apply to London. Though this year's measures for relief of productive industry from rating burdens will touch the metropolis, the hands of the Minister of Health are, for the moment, too full for him to tackle the big task of reforming the system of London rating. London, however, cannot afford to be indifferent to the difficulties which arise elsewhere, if for no other reason than that her turn will surely come.

SUPPURATION IN THE LOWER RESPIRATORY TRACT.

THORACIC surgery has already many victories to its credit, but in spite of technical progress the treatment of suppuration in the lower respiratory tract may still be very difficult. The same is true of the differential diagnosis, and two critical reviews,[1] by BORDET and SERGENT and by ARCHIBALD, bear witness as much to the need for care and caution as to the efficacy of the methods now available. Radiology has certainly extended our knowledge of the relationship of bronchial to pulmonary suppuration. It is clear that expectorated pus must have either a bronchial or an extra-bronchial origin, and a radiogram taken after the injection of lipiodol affords a clear picture of the condition of the bronchial tree, provided the tubes are patent. Suppuration due to bronchiectasis can thus be distinguished from that due to other causes. But the help to be gained from injection of lipiodol is limited by the fact that its flow may be obstructed, so that it fails to penetrate into a diseased area. An abscess may communicate with a bronchus, but if the fistulous connexion between the two is partially obstructed by granulation tissue, as is usual, the flow of the opaque oil will stop short at the entry. We may therefore divide into two groups those radiograms revealing shadows which suggest the existence of suppuration in lungs or pleura. In the first the injection of lipiodol proves the opacities to be due to bronchiectatic dilatations; these may or may not be complicated by inflammation of surrounding structures, but the primary lesion is in the tubes. The second group comprises the films with shadows which are not penetrated by lipiodol, and these may be due to suppuration within the lung or pleural cavity. Such shadows may be homogeneous or otherwise, the existence of an abscess cavity being suggested by an area in which a dense opacity surrounds a centra clearer space. If such a cavity communicates with a bronchus and contains pus, the presence of a fluid level will demonstrate the condition on the film. This appearance may be due to pulmonary abscess, encysted pyo-pneumothorax, or a suppurating cyst. The diagnosis of a large pyo-pneumothorax seldom gives rise to difficulty, but if the collection of fluid

[1] Diagnostic radiologique des suppurations broncho-pleuro-pulmonaires chroniques: Emile Sergent et François Bordet. Le traitement chirurgical des suppurations pulmonaires: Edward Archibald, M.D. Arch. Med.-Chir. de l'Appar. Resp. 1927, ii., 393–443.

is small, and especially if it is near a lung fissure, differentiation between intrapulmonary and extrapulmonary suppuration may be almost impossible. The relationship of the fluid to the parietes of the chest and to the pulmonary shadow may be of help for, as BERNOU has pointed out, a characteristic of a localised empyema is that its inner border makes a sharp angle with the parietes. The relationships of a similar collection at the base of the lung may be determined by a radiogram taken when the patient is in the Trendelenburg position, which will reveal the relations of the costo-phrenic sinus. It should not be forgotten that pulmonary abscess is a relatively common condition, whereas a localised empyema is rare.[2] Interlobar empyema is characterised by a triangular shadow, and in the transverse position this slopes in a downward and forward direction. If the pus tracks into a bronchus the appearance of a cavity with a fluid level will be seen, indistinguishable from that of a similar cavity resulting from rupture of a pulmonary abscess. Perhaps the greatest difficulty is encountered when a shadow of more or less uniform opacity is seen, when lipiodol fails to enter the area implicated, and when no evidence of cavity can be detected. This may be due to abscess or to pleural effusion. A cloudy appearance which has been likened to smoke-puffs indicates the probability of an abscess with irregular prolongations in the lung.

The treatment of chronic pulmonary suppuration is fraught with both difficulty and danger. As H. C. BALLON says, there can be no rule-of-thumb for dealing with an abscess of the lung, a bronchiectasis, or an encysted empyema as though each were a separate entity; for inflammation in the lower respiratory tract is apt to involve bronchi, pulmonary parenchyma, and pleura. The treatment of bronchiectasis depends upon the co-existence of complicating factors. If lipiodol reveals bronchial dilatation, and if there is no evidence of accompanying abscess formation, medical treatment by posture, vaccines, and attention to hygiene is indicated. In graver cases, when radiograms show that the process is extending or that ampullary dilatations make drainage by natural methods impossible, further measures must be taken. BALLON has treated 500 cases by direct aspiration, employing the bronchoscope for this purpose. Though cure can seldom be attained by this means, he claims a considerable measure of success in the alleviation of symptoms and improvement in health. He considers that bronchial lavage is dangerous and unnecessary, and though treatment of bronchiectasis by artificial pneumothorax may cause temporary improvement, it is followed by relapse as soon as the lung is allowed to re-expand. Phrenic evulsion seldom, if ever, leads to a satisfactory compression of the dilated tubes. Thoracoplasty holds out small prospect of permanent benefit and the operative mortality is high. To avoid the risks from shock C. A. HEDBLOM has devised "gradual thoracoplasty," the operation being carried out in from three to seven stages. Even with these precautions he avoids operating when cloudy shadows in the skiagram suggest that the bronchiectasis is complicated by pulmonary suppuration. Treatment which may demand seven operations, and is only applicable to uncomplicated forms of the disease, seems to have little to commend it. Lobectomy, following ligature of the bronchi and vessels of the diseased lobe, is more dangerous than thoracoplasty and no better in its results. A more hopeful method is that of E. A. GRAHAM, who practises pneumectomy by cauterisation. After resection of portions of three or four ribs and the formation of adhesions to protect the healthy pleura, the diseased tissues are removed by the thermo-cautery. Several applications of the cautery may be necessary to remove all the diseased tissues, and a mortality of at least 20 per cent. may be expected after this comparatively safe procedure—a striking commentary on the dangers attending surgical interference in bronchiectasis.

The classical operation for chronic pulmonary abscess is pneumotomy and drainage, following rib resection and the formation of adhesions to protect the pleural cavity. Immediate improvement has been the rule, but closure of the wound has almost inevitably been followed by recurrence of symptoms and further pus formation. The cause of these disappointing results has been explained by the use of lipiodol. Bronchiectasis is a frequent complicating factor in pulmonary abscess, and it is useless to drain the abscess if neighbouring bronchi are dilated and harbouring pus. E. ARCHIBALD has abandoned simple lobectomy in favour of Graham's method of cautery pneumectomy. A more extensive rib resection than that practised in lobectomy is carried out and adhesions are provoked by packing with gauze. At a second operation the abscess is opened by means of the thermo-cautery and the cavity is packed. At a later date lipiodol is injected into the cavity and a radiogram is taken to ascertain if there are any residual bronchiectatic lesions or secondary abscesses. Any further destruction of diseased tissues is carried out by means of the electro-coagulating needle. Thus, while simple pneumotomy may suffice for the treatment of acute abscess or for a simple circumscribed abscess near the surface of the lung, pneumectomy by cautery is the operation of choice for the complicated or deep-seated forms. Lobectomy may be a more radical operation but, as ARCHIBALD remarks, a living man with a fistula is worth several dead men cured by lobectomy. The operative mortality for the latter operation is given as 57 per cent.

[2] See THE LANCET, 1928, i., 1336.

DEAFNESS AND INDUSTRIAL DISABILITY.

TOTAL deafness, or anything approaching total deafness, is a far more terrible affliction than is easily realised by the general public, but unlike blindness, it does not make an immediate and universal appeal to compassion. It is a familiar fact that a blind man instantly excites our pity, while a deaf one is somewhat annoying. The consequence is that, of all forms of charitable effort, the agencies which have long striven to help the deaf in this country are about the worst supported. The skilled assistance which can be given to the totally deaf will usually turn them rapidly into people who can be valued and self-supporting members of the community; but this assistance is by no means always forthcoming, and the standard of our care for the deaf is lower than for almost any other comparable class of afflicted people. Those who are deaf from birth, or become severely deaf at an early age, are also necessarily dumb. Of these it is reckoned that there are about 40,000 in Great Britain, but there are no satisfactory statistics to show the number—certainly far greater—of those who become so deaf later in life as seriously to interfere with their employment. For deaf children, up to the age of 16, local education authorities, and the Education Department, have been doing for many years extraordinarily good work. These children, however, when they leave the special

schools, together with all who have become deaf in later life, are at a great disadvantage in finding employment. It is true that many agencies, mostly missionary societies, exist for the purpose of giving them help, but these have great difficulty in obtaining funds, and they are unable to assist more, at most, than half the deaf people who are in need of their services. Of those who have become deaf after childhood, men whose deafness was brought about by the war are dealt with by the Ministry of Pensions, and on the whole quite adequately; but for the far larger number who have become disabled in civil life there is virtually no help at all.

All this was admirably stated a few weeks ago by Lord CHARNWOOD, who performed a notable service to deaf people by raising the question in the House of Lords, when he asked the Government to institute an inquiry. It is much to be regretted that Viscount GAGE, for the Government, was unable to accede even to this modest request, chiefly on the ground that, if machinery like that set up to deal with the blind is applied to all congenital affections, the Ministry will have a great financial load placed upon it. It is perhaps some consolation that this reply appeared to be unsatisfactory to his hearers; indeed, Viscount HALDANE raised the criticism that it had been prepared before the debate came on, and before anybody could know what was going to be said. It is a waste of money to teach deaf and dumb children, unless there is adequate machinery to assist in their employment when taught, and it is probable that Government assistance to the existing societies would prevent much of this waste at little cost. In any case, the inquiry asked for would cost little or nothing, and would do much good by stimulating public interest where it is sorely needed.

PRESENTATION TO SIR GEORGE MAKINS.

ON Wednesday, June 20th, in the Governors' Hall at St. Thomas's Hospital, Sir George Makins was presented with his portrait, the gift of his friends, pupils, and colleagues. The painting is by Mr. James S. Sleator and is a sound piece of work. The proceedings, which were quite informal, were opened by Sir Arthur Stanley, treasurer of the hospital, with a few warmly appreciative words on behalf of the governors. He was followed by Sir Percy Sargent, Sir Cuthbert Wallace, and Dr. H. G. Turney, who as friends and colleagues of different periods dwelt in turn on the length and value of Sir George's services to the medical school and hospital, and on the affectionate regard in which he was held by all with whom he was associated. Special reference was made to Lady Makins who had taken so large a share in establishing and maintaining these kindly relationships. Sir George, in reply, expressed his profound appreciation of the honour done to him.

All the medical profession will unite in appreciation of the action taken by St. Thomas's Hospital, for Sir George Makins, though a great St. Thomas's man, is a representative of the best scientific and professional development which medicine throughout our country—and the world—has seen during the past half century. His work commenced when the verities of the Listerian teachings had been established, and he has been a leader in all the advances which followed—advances which, while they were most openly reflected at first in the enlarged scope of operative surgery, have since revolutionised the whole of medical work. How clearly throughout this onward march Sir George Makins has been recognised as a protagonist is shown by the high responsibilities which have at different times been laid upon him by his country and by his colleagues as man of science, practising surgeon, and wise administrator.

Annotations.

"Ne quid nimis."

THE BRITISH MEDICAL ASSOCIATION'S ANNUAL MEETING.

FORTY-THREE years have elapsed since the British Medical Association last visited Cardiff, and the annual meeting which opens there in ten days' time will be the ninety-sixth in its history. Sir Ewan Maclean, the incoming President, will give his address on the evening of Tuesday, July 24th, and the scientific sections will meet, as usual, on the three days following. Their programme from year to year shows the gradual enlargement of the scope of medicine, and the task of selecting subjects grows ever more embarrassing. Nevertheless, the organisers have once again succeeded in arranging meetings that reflect many of the main tendencies of medicine—and especially clinical medicine—at the present time. While the physicians are to discuss diseases of the coronary arteries, the prevention and treatment of diphtheria, and the problem of acute nephritis, the Section of Surgery will consider such subjects as pancreatitis, the diagnosis and treatment of spinal cord tumours, the treatment of gangrene, the diagnosis of ureteric calculi, and (with the Section of Radiology) the fallacies of radiography in abdominal diagnosis. The vexed questions of unsuccessful forceps cases and sterility will again be raised at the Obstetrical Section, which will also hear papers on other topics, whilst the Section of Mental Diseases and Neurology will devote its attention to autotoxæmia in relation to the causation of psychoses, the differential diagnosis and treatment of cerebral states following head injuries, and the early treatment of psychoses and psychoneuroses. Of special interest at the present time will be the discussion at the Pathological Section on encephalitis occurring in the course of virus disease and the exanthemata, and another occasion of importance in connexion with vaccination will be the session devoted by the Section of Preventive Medicine to the value of present methods of controlling infectious diseases. Without reproducing the entire programme it is impossible to give a fair idea of the topics chosen for discussion, ranging as they do from the medical treatment of gastric disease to the decline of the birth-rate. Enough has been said, however, to show their catholicity and their appropriateness. The meetings will be held in the mornings, and will be interspersed with dinners, receptions, excursions, and other social events. As usual, the meeting of representatives of the Association will be held before the scientific sessions, and it will open on the morning of Friday, July 20th.

LITTLE FLEAS AND LESSER FLEAS.

THE aggregation of man into concentrated communities has produced most of the problems with which modern hygiene has been mainly concerned. In nature hosts and parasites have generally come to some sort of stable balance with "live and let live" as its motto. Of this we should know more if we understood the parasitology of wild animals better; trypanosomes in game in Africa and Gaertner's bacillus in rats at home are familiar examples. Similarly, when vegetable crops are grown over wide areas in more or less pure culture, special troubles with parasites generally arise. This is particularly apt to happen when the plant itself has been moved from its natural home; coffee, for example, and rubber and bananas and oranges are now grown all over the world where climatic conditions are appropriate. Along with this transportation of hosts there has been a dispersion of parasites, and out of the troubles that have come from upsetting the balance natural to any country has arisen an extraordinarily interesting chapter of biology. The parasites of a plant are, it seems, normally controlled

and kept within bounds by a second series of parasites, and these again sometimes by a third. In the moth *Pyrausta nubilalis*, for instance, something of a pest to corn in Southern Europe and a serious injury in the United States since its introduction in 1910, 18 parasites (mostly insects) have been found to make their living on the larva, one on the egg, and two on the chrysalis.

If a parasite gains access to a new country without its own parasites it is obviously in a very advantageous position, of which it may make full and foul use, and similarly the multiplication of a host on an unprecedented scale may give parasites a chance to increase beyond the controlling powers of the secondary parasites. The plain remedy is to encourage or introduce the parasites of the parasite, and in a number of instances this plan has been put into operation with signal success. An Australian ladybird, for instance, has proved a perfect remedy for the cushion scale of oranges and lemons in California, Portugal, South Africa, Egypt, and elsewhere. A chalcid wasp from South Africa similarly controls the black scale insect in California, and the Italian silk industry has been saved from ruin by importing a parasite of the scale insect which destroys the mulberry trees. Plants which grow too profusely have in the same way been brought within bounds by importing insects which feed on the seeds. The problems involved are very complex, and Dr. W. R. Thompson, who works at the laboratory maintained at Hyères for the purpose by the United States Government, contributes a thoughtful survey of the ramifications of interrelationships which are involved to the last number of *Parasitology* (1928, vol. xx., p. 90).

The general principles discussed are applicable to many problems of human hygiene, and the details have, of course, a very intimate bearing on the control of the insects which carry disease and of human parasitic worms. Some years ago an ingenious suggestion was made by Dr. B. S. Elgood and Major T. Cherry [1] that bilharziasis in Egypt might be controlled by encouraging the native population in the villages to keep ducks. The suggestion arose from the observation that the snail, which is the intermediate host of the bilharzia, is absent from those ponds and lakes to which ducks have free access, whereas they are abundant elsewhere. It would be interesting to learn whether this scheme was ever tried out. d'Herelle would have us believe that bacteria may be curbed by encouraging his *Protobius bacteriophagus*: it may be so. But it is certain that African sleeping sickness will ultimately be controlled only by finding out how the tsetse-fly lives and moves and has its being; by discovering its parasites and other difficulties and increasing them; and by ascertaining its favourite food and the conditions of life which it likes, and by destroying them.

THE INFLUENCE OF DIET ON HÆMOGLOBIN REGENERATION.

So sensational were the results of the application of the liver treatment to primary anæmia that a more or less universal disappointment was experienced when its effects in secondary anæmias were pronounced to be slight. In fact, the indefinite results in these cases as compared with the remarkable improvement induced in cases of primary anæmia led many observers rather hastily to conclude that liver is without effect in any type of anæmia other than the primary or Addisonian. Further experience has caused most of those who have investigated the matter to modify their views, and clinical experience is beginning to show that liver is not without beneficial effects even in the secondary anæmias. Prof. G. H. Whipple has been able to show that in experimental animals liver has indeed a powerful effect in inducing hæmoglobin regeneration in secondary anæmia. This effect is not confined to liver but is shared in lesser degree by many other foodstuffs. In the June issue of the *American Journal of the Medical Sciences* Prof. Whipple summarises the results of tests on various articles of diet carried out under his direction in the Department of Pathology of Rochester University. The experiments were made on dogs brought to a standard degree of anæmia by repeated bleedings, and they appear to have been subjected to rigid control. Of all the articles of diet tried beef liver produced the most rapid regeneration of hæmoglobin; second to this came beef kidney, and then chicken gizzard, the index of which works out at 85, compared with 100 for beef liver. Chicken liver had a powerful effect, but fish liver appeared incapable of producing the slightest regeneration of hæmoglobin. Prof. Whipple found various vegetable substances to be effective, though none of them to the same extent as mammalian tissue. Thus apricots, apples, raisins, and prunes all showed considerable power; raspberries were as inactive as fish liver. "The leafy vegetables," says Prof. Whipple, "have a reputation much better than they deserve. . . . We can furnish no evidence of unusual blood regeneration following liberal diets of various greens. Beet greens, spinach, asparagus, and lettuce all show values of between 5 and 20 g. hæmoglobin production per two week period above the control level," as opposed to 100 for beef liver. Iron in the form of ferric citrate was found to bring about a material increase in hæmoglobin formation but the response was improved by the addition of liver; it was possible to demonstrate a liver reaction superimposed upon an iron reaction. Prof. Whipple appears to have come to the conclusion that the favourable results produced in secondary anæmia by the exhibition of suitable dietary factors, of which liver is only one, is due not to the activity of any hormonic substance but simply to the supply of the building-stones in the form of suitable amino-acids necessary for the elaboration of hæmoglobin. That the hæmoglobin of the muscle may be called upon to a limited extent to supply deficiencies of the blood hæmoglobin is a further observation arising out of this work. It has been shown, however, by biological tests that the hæmoglobin molecules derived from different tissues are not identical. It is probable that muscle hæmoglobin must be completely broken down before it can be utilised for building up blood hæmoglobin. These experiments are likely to help in the elucidation of the biochemistry of the blood as well as in therapeutics, and we trust that they will be continued and extended.

ULCERATIVE COLITIS.

THE bacteriology of chronic ulcerative colitis still gives rise to lively controversy. In 1924 J. A. Bargen reported from the Mayo Clinic that he had found a Gram-positive diplococcus in 90 per cent. of cases, and vaccines prepared from the organisms have been used at the Clinic with apparent success in treatment of the condition. But although Bargen found that freshly isolated cultures of the diplococcus produced diarrhœa and ulceration of the colon in rabbits and dogs, other workers have not wholly accepted his organism as causal; M. Paulson, of Baltimore, for instance, has reproduced the disease with various strains of streptococci which appeared in diplococcal form when freshly isolated. E. MacNaughton,[1] of Montreal, now brings forward support for Bargen's view by reporting the association of a diplococcus with five cases of ulcerative colitis, one of these cases being especially interesting because the appendix was removed after ileostomy, and in its mucosa there was an unruptured abscess from which a pure growth of Gram-positive diplococci was obtained. The characters of Bargen's diplococcus are identical with those of the "enterococcus" which French bacteriologists have long regarded as pathogenic, causing enteritis in infants and adults, and some forms of

[1] THE LANCET, 1919, ii., 636.

[1] Canad. Med. Assoc. Jour., 1928, xviii., 568.

meningitis, and appearing as a secondary invader in cases of tuberculosis and paratyphoid fever. This organism was prevalent in the "fæcal infection" of wounds sustained on the Flanders front and on Gallipoli in 1915. It seemed to be of low virulence, but gave rise to a chronic indolent inflammation on invading the damaged muscles. Accidental infection of operating surgeons and laboratory workers occurred several times; the cases were slow in evolution but resistant to treatment. After the inoculation of large doses of killed organisms as vaccines in healthy persons no immunity reactions could be demonstrated. This diplococcus may need to be watched for as a secondary invader, but the primary ætiological factor in chronic ulcerative colitis is, we feel, as yet undiscovered.

THE COW AND UNDULANT FEVER.

IN the Court of Public Health the cow frequently stands in the dock on the charge of conveying disease to man. On some counts she eventually secures an acquittal—for instance, as a sufferer from scarlet fever—while on others, and particularly tuberculosis, a fair but protracted trial has resulted in a verdict of guilty with extenuation as regards the amount of disease transmitted. Fresh diseases, however, continue to be laid to her charge; for example, the last few years have shown that food poisoning of the salmonella type may sometimes be traceable to bovine infection, members of this group of bacilli being excreted in the milk.

The most recent indictment is that the cow is a source of undulant fever in man, and this involves consideration of an interesting field of veterinary-medical pathology. Malta fever, or undulant fever as it is now more generally called, was shown by Bruce in 1887 to be due to an organism called by him *Micrococcus melitensis*. Its relationship to infected goats and goat's milk was subsequently established. About 1897 Bang in Denmark showed that a bacillus named by him *Bacillus abortus* was the causal organism of contagious abortion in cattle. For many years no relationship between the two organisms was even suspected, and it was only after a further decade that comparison of the two types showed their extremely close agreement. This comparison was made by Miss A. C. Evans, of Washington, who further showed that infection with the organism of Malta fever tends to produce abortion in goats, whilst in later experiments she found that inoculation of cows with strains from human cases of Malta fever results in abortion. These findings have been confirmed and amplified by a number of other observers. In a further report in 1923, after a study of many types, she finds that strains of the *melitensis-abortus* group isolated from five species of animals fall into two distinct serological types which are closely related. One type, which may be called the *abortus* type, is characteristically bovine and porcine; the other, which may be called the *melitensis* type, is characteristically human and caprine. The types are not, however, restricted to special host species. The general opinion which is gaining ground is that *melitensis* and *abortus* are not distinct bacteriological species, but merely distinct serological types of the same species. *B. abortus* is not uncommon in England, and Wilson and Nutt in 1926 have recorded its presence in cow's milk in this country. In a recent paper Dr. P. Manson-Bahr [1] gives a summary of four sporadic cases of undulant fever in this country, most of which were not explicable on the grounds of infection with goat's milk. In addition he gives particulars of two further cases of his own, both of which were probably due to infection through cow's milk. He suggests that other cases might be found by closer observation of districts where bovine abortion is endemic.

At the last meeting of the permanent committee of the Office International d'Hygiène Publique it was reported that work in Sweden and Denmark had confirmed the view that *B. abortus* is the causative agent of undulant fever, and it was stated that this infection, "propagated by milk or cattle, is shown to be more frequent in the latter country than typhoid and paratyphoid fever." A good many obscurities remain, however, which can only be cleared up by further investigations. For example, a considerable percentage of sera from persons not suffering from disease give a serological reaction with *B. abortus* antigen. The significance of this has not been established. Contagious abortion in cows is common in certain areas while human infections are probably rare. This may be because in infected cows *B. abortus* is only present in quite small numbers in the milk, or it may be a question of low virulence to man. The general position may be summed up by saying that the evidence goes to show that there is a risk of undulant fever being transmitted through drinking raw infected cow's milk, but as yet insufficient data are available to measure the extent of that risk or even to show if it is more than remote.

[1] Abhandlungen aus dem Gebiete der Auslandskunde, Hamburgische Universität, Bd. 26, D, Medizin Bd. 2.

THE NEW ZEALAND HOSPITAL SYSTEM.

BY way of an appendix to its annual report the New Zealand Department of Health has issued an elaborate survey of the hospital system of the Dominion, called forth mainly by the recent considerable increase in expenditure. The New Zealand hospitals are maintained partly out of the rates, partly by Government subsidies, and, to a much smaller extent, by voluntary contributions, which relieve the rates but not the taxes. Notwithstanding that help, even in comparatively slender degree, is derived from private sources, the document adopts a rather scornful attitude towards the voluntary system, which it describes as based upon "sentimental appeals." The Health Department is satisfied that the hospital arrangements of the Dominions are "unique," and that no real improvement in the financial method of maintenance has yet been proposed. In one respect, however, something less than perfection has been attained. "The only fault in the hospital system of New Zealand arises out of the number of hospital districts," and it is recognised that it is desirable to have thoroughly equipped modern hospitals serving larger districts, although the cost of even one such institution in each of the 47 districts would be prohibitive. Therefore, not only must no new districts be created, but existing ones must be amalgamated, a process which is greatly hampered by "selfish and parochial" opposition. Even under the system which is thus admitted to be imperfect, the cost of the hospitals has gone up by 150 per cent. in the last ten years, for much the same reasons that have operated in England. There has been a notable increase in the number of beds, which have grown from 5929 in 1923 to 7060 in 1927. The explanation of this expansion is that in New Zealand, as elsewhere, a greater proportion of the population is using the hospitals. This tendency of all classes to resort to the hospitals is held to show that there is no real need for the provision of private wards, though the Department of Health would be willing to see at least one hospital try the experiment. In one respect the New Zealand hospitals differ materially from those in the Motherland. In the Dominion the out-patients are fewer, in proportion, than the in-patients; there is, however, a tendency to develop the out-patient departments of the general hospitals. Upon the difficult question of the payment of medical staffs the Survey is emphatic. The Director-General of the Department is definitely of opinion that "the time has come for the abolition of the honorary staff," and he lays it down that "the honorary system is only suitable for hospitals treating only pauper patients." Neither the New Zealand branch of the British Medical Association nor the Dominion's Hospital Boards Association has expressed quite so sweeping a view, and so far no action has been taken.

THE TREATMENT OF ILEUS BY SPLANCHNIC ANÆSTHESIA.

ACUTE ileus, whether due to some mechanical obstruction, to atony, or to spasticity of the intestinal musculature, is one of the complications most dreaded by the surgeon. Numerous methods of treatment have been tried, both operative and therapeutic, and have recently been reviewed in our columns [1] by Mr. A. H. Southam. In a certain percentage of cases enterostomy is successful, but sometimes neither fæcal matter nor gas is discharged through the enterostomy opening and no relief of symptoms ensues. The suggestion that ileus might be satisfactorily treated by blocking the splanchnic nerves has recently been made by A. Ochsner, L. M. Gage, and R. A. Cutting,[2] as a result of a series of carefully conducted experiments on animals. The suggestion has a sound theoretical basis. Bayliss and Starling showed that physiological ileus could be abolished by resection of the splanchnics, and P. Rosenstein and H. Kohler found that procaine hydrochloride solution introduced into the splanchnic area of rabbits produced peristalsis. In those cases of paralytic ileus which are due to the inhibition of intestinal mobility from impulses passing by way of the sympathetics, the blocking of the reflex arc should abolish the inhibition. This mechanism accounts for the good results obtained by continental surgeons from the use of spinal anæsthesia. The procedure is not, of course, applicable to cases of mechanical obstruction where, in the early stages, there is no interference with the contractibility of the intestinal musculature. In any case spinal anæsthesia is not without its dangers. Splanchnic anæsthesia appears to be a safer procedure. Ochsner and his co-workers adopted the method devised by M. Kappis, using a 1 per cent. solution of procaine hydrochloride injected into each side at the lower border of the twelfth rib. Their experiments showed that splanchnic anæsthesia will produce peristalsis in physiological, chemical, and mechanical ileus in dogs, and there seems no reason why it should not be applied clinically to cases of paralytic ileus following operation, or to those which arose from mechanical obstruction, but do not clear up when the obstruction is relieved. Even when enterostomy has been performed, splanchnic anæsthesia might be valuable when toxæmia persists owing to the continued paralysis of the musculature and the inability of the intestine to expel its contents. The advantage of the Kappis method is that the abdomen need not be opened, the splanchnic area being approached through the retroperitoneal space and not through the peritoneal cavity. Reports as to the results of clinical trial of this method will be awaited with interest.

THE TAXING OF KNOWLEDGE.

Captain Ian Fraser's attempt to introduce into the Finance Bill a clause exempting scientific films from import duty met with the blankest *non possumus* from the Financial Secretary to the Treasury and only a faint hope was held out by the Chancellor of the Exchequer. The answer of officialism is that exemption would be "difficult and indeed almost impossible to administer." For ourselves we entirely decline to believe that it is beyond the power of expert draftsmen to frame, or of sensible civil servants to operate, a clause exempting films which are wholly educational in character. Exactly the same discrimination is applied elsewhere in connexion with the entertainments duty, and there is not the slightest reason why, as Captain Fraser suggested, the customs officials should not be satisfied with the certificate of the Royal Society, the British Medical Association, the Royal Astronomical Society, or other accredited body of the same sort. The Privy Council Committee for Scientific and Industrial Research seems a suitable organisation for the purpose. Nor need the proposed exemption cause a multiplication of officials; the country is evidently well equipped with personnel. Prof. H. H. Turner recounted, in a letter published in the *Times* of July 3rd, the experiences of a distinguished American astronomer who came over to lecture to the Royal Astronomical Society on the atmospheres of the planets and who brought with him two cinematograph films of the successive phases of Jupiter. He produced the films from his luggage at Victoria Station, explaining their nature and purpose. The films were impounded. Help was sought, says Prof. Turner, from the Royal Observatory, and the customs officer was assured of the integrity of the lecturer and his scientific purpose. Next morning Mr. A (the officer thus assured) introduced the lecturer to Mr. B in an adjoining office, who gave him papers to be carried to Mr. C elsewhere, who arranged for a meeting with Mr. D in the afternoon, as the result of which an order was made for removal of the films to the Bonded Film Stores in Endell-street. There the lecturer explained the situation to Mr. E, who introduced him to Mr. F, who sent him back to Mr. C, who referred him to Mr. G, who gave him an order on Mr. F for delivery of the films at Endell-street, on payment of duty. This occupied two days; part of the third day was devoted to official arrangements for return of one of the films (a reserve film) to America; the total expenses were about £4, including a fine of 2*s*. 6*d*. for the alleged offence of carrying "merchandise" in a trunk. What the distinguished American astronomer may have thought at this British adaptation of Ellis Island procedure—for fear a little scientific knowledge should creep into this country untaxed—is not recorded. What the opinion of the English public will be we would venture to guess. The use of the cinematograph in revealing to the medical profession the latest results of foreign research needs no emphasis. The Exchequer and the customs officials are the country's servants and not its masters. They must find some means of doing even what is "difficult and indeed almost impossible."

OXFORD OPHTHALMOLOGICAL CONGRESS.

THE eighteenth annual meeting of the Ophthalmological Congress, held last week at Oxford, was attended by about a hundred members. On Thursday Dr. Leonard Hill opened a symposium on ultra-violet rays, dealing principally with the physics of the subject. In disease, he said, the beneficial action of the rays depended upon appropriate dosage, too large doses being liable to do harm. Healthy subjects, on the other hand, were subject to comparatively little risk. How the beneficial effect is produced remains to a great extent a mystery. It has, however, been definitely proved that one effect is to increase the bactericidal action of the blood and further, that minute amounts of ergosterol are activated by the rays to produce vitamin D. Dr. N. S. Lucas gave his experience at the Zoo and at the Lister Institute where the rays have been proved to be curative for rickets in monkeys. As to their application to ophthalmic therapy not much was said. Friday's programme included a paper by Mr. Burden Cooper on the spectroscopy of the crystalline lens. The ash shows traces of various metals, and it may be significant that there is considerably more calcium in the ash of cataractous lenses than in that of normal ones. A discussion on sympathetic ophthalmia was opened by Mr. Harrison Butler. Recent advances are in the direction of diagnosing the disease in the exciting eye before the sympathising eye has become affected, the main points of interest being how far the differential blood count is a valuable diagnostic sign and how far the evidence of the slit-lamp is of practical service in diagnosis. Mr. Harrison Butler had not found the former of much service and relied chiefly on the latter. Mr. S. H. Browning and Mr. M. Hepburn joined in the discussion. The latter recalled his paper on the subject read to this congress

[1] THE LANCET, 1928, i., 41.
[2] Jour. Amer. Med. Assoc., June 9th, p. 1847.

in 1926 and stated that in possible cases of sympathetic disease he always had a blood count taken, and if it were positive began the injection of arsenical compounds at once. The discussion was followed by the delivery of the Doyne Memorial Lecture by Prof. Arthur Thomson, whose subject was "Observations on the Eyes of Birds" and his main thesis a theory of the function of the pecten, a structure which has been a mystery to anatomists for 250 years. The theory is that the pecten, being a deeply pigmented body and being lined with a thin hyaloid membrane, acts as a dark mirror, reflecting objects from a direction other than that of the bird's flight on to the retina, and avoiding dazzle. The suggestion was made that it acts as a sort of periscope, causing the bird in its flight to be aware of any bird of prey hovering above him in the sky. The demonstrations included an ingenious apparatus for educating the amblyopic eye of young children by Mr. E. Maddox, a selection of Hamblin's fundus drawings demonstrated by Mr. Rayner Batten, different applications of the duochrome principle to refraction and other ends. Lighter items of the programme included a garden party, at which Prof. and Mrs. R. A. Peters, of Trinity College, were hosts, the annual dinner at which Sir Farquhar Buzzard, the new Regius Professor of Medicine, was the chief guest, an excursion to the Morris Motor Works, and the inevitable photograph.

THE ALCOHOL PROBLEM.

THE effect on the sobriety of the nation of the restrictions on the production and sale of alcoholic liquors during the war was discussed by Dr. H. M. Vernon in an address delivered to the Society for the Study of Inebriety on July 10th. According to him the most important feature of the control was the regulation of the hours of sale. When no liquor could be obtained before mid-day or between 2.30 to 6 P.M., it was, for the most part, taken only with food and was thereby rendered much less harmful. The arguments in favour of the limitation of the hours during which public-houses are open and of the taxation of wines and spirits, according to their concentration, are well set out in Dr. Vernon's recent book,[1] which we commend to anyone who wants to know what has been achieved and to reflect how further progress may be made. It is a plain, easy, straightforward account of the physiological effects of alcohol and of the various systems of regulation and prohibition which different countries have tried, with their results, including the improved public-house. Dr. Vernon is an experimentalist and with the aid of numerous tables and diagrams he appeals continually to experience: the efficacy of the operations of the Liquor Control Board is measured in the same spirit as that which moves him to determine how much whisky of what strength he must drink before he can no longer work a typewriter. He probably has some general prejudices on the subject, but he keeps them out of sight as much as any man may, and it is only because he tells us so that we know he is one of those really moderate drinkers who are the despair of the ardent teetotaler. Of complete prohibition as a practical proposition for to-day he thinks poorly, and he attaches much more importance to control based on the physiological facts, ascertained by experiment, that alcohol is less intoxicating if it is taken when the stomach contains food and if it is well diluted. He advocates, therefore, a stringent pursuit of the plan at present prevailing in this country of making alcohol easily available only round about meal times and, by differential taxation, making concentrated alcohol more expensive than dilute. He would indeed exaggerate the difference by cheapening beer which contains as little as 3 per cent. of alcohol on which it is almost impossible for anyone of a normal capacity to get drunk.

[1] The Alcohol Problem. By H. M. Vernon. London: Baillière, Tindall and Cox. 1928. Pp. 252. 9s.

THE PROGRESS OF DERMATOLOGY.

THE May number of *American Medicine* is consecrated to dermatology, and among a heterogeneous collection of original papers is one by Dr. E. L. McEwen, of Chicago, which admirably assesses the progress of the last ten years and helps to clarify the subject for practitioners, to whom the thesis is addressed. "What does the general practitioner see in dermatology?" asks Dr. McEwen. "He sees a jungle, to him more or less impenetrable, with trails that are poorly blazed, devious, full of pitfalls, and leading more often to denser thickets than to open spaces." The metaphor could hardly be better chosen, for there is no branch of medicine in which progress has been more sudden. Before the discovery of the spirochæte there was an increasing tendency towards portentous nomenclature, serving chiefly as a ragged veil to ignorance. With the solution of many ætiological problems, among which may be mentioned the tuberculides and eczematoid ringworm, and the recognition of the importance of focal sepsis and allergy in cutaneous manifestations, the veil is lifting, and if progress is maintained at the same rate it is reasonable to hope that before long we may be in a position to throw light on psoriasis, pemphigus and mycosis fungoides. The elucidation of the problem of eczema is well under way, and Dr. McEwen accepts the differentiation of dermatitis as opposed to eczema by relegating to the former all cases that are clearly of external causation, or "nearly so," classing in the eczematous those cases whose cause is suspected of being purely internal. He draws attention to the reduced likelihood of any given eruption being syphilis, which a generation ago had a statistical frequency of over 11 per cent., and was second only to eczema among dermatological diagnoses. In this branch of medicine the introduction of various chemotherapeutic remedies, such as salvarsan and the X rays, radium and ultra-violet rays, have greatly strengthened our hands of late years, and the journal under review bears witness to a new and hopeful outlook.

DEATH OF DR. POTTEVIN.

MEDICINE in its broadest sense has lost a good friend by the death on July 6th of Dr. Henri Pottevin, Director of the Office International d'Hygiène Publique. He had a cerebral hæmorrhage shortly after the May session of the Permanent Committee and a second last week which proved rapidly fatal. Effective international health work has many difficulties, but as far as the Office International was concerned these were surmounted by the ardent, quick-brained Frenchman of the Midi who had a positive genius for consolidating and interpreting the contributions and opinions of men from other countries and of combining them, wherever it could be done, into logical statements and agreements. Henri Pottevin was in his sixty-third year, a doctor of medicine and science, a collaborator of Pasteur in his early days, and always in touch with the Pasteur Institute. He was director of the health office of the town and port of Havre for some years, and was appointed general secretary of the Office International from the date of its foundation in 1907, succeeding Cazotte as Director in 1926. He had many other activities, notably as a Professor in the Conservatoire des Arts et Métiers in Paris, and he had an active political life which led to his being appointed a Senator of his native department, Tarn et Garonne. He left the Senate only last year. From the British point of view he will perhaps best be remembered in connexion with the various official conferences at which the successive international sanitary conventions relating to infectious disease and quarantine were concluded. In that of 1912 he was rapporteur for all technical questions, and in the recent conference of 1926 he was rapporteur général and, in point of fact, the management and satisfactory conclusion of that international instrument could never have been achieved without him. Much had been hoped from

his appointment, immediately after that conference, as director of the Office International, especially since he had seen this organisation grow from being representative of a small number of countries to one to which practically every Government now officially adheres, and whose Permanent Committee accepts the additional responsibility of advising the Health Organisation of the League of Nations. He will be remembered gratefully by those who, towards the end of the late war, used to attend the Inter-Allied Sanitary conferences for comparison of data regarding the prevention of disease in the different allied forces.

THE International Cancer Conference meets in London from July 16th to 20th. Delegates from nearly every important medical school and university in the world will attend its scientific meetings, which are to be held at the houses of the Royal Society of Medicine and of the College of Nursing. Owing to the limited space only a small number of tickets of admission are available, for which application should be made to the Secretary of the Conference, at the Royal Society of Medicine, 1, Wimpole-street, London, W. 1.

Sir Robert Philip, Professor of Tuberculosis in the University of Edinburgh and President of the British Medical Association, has been awarded the Trudeau Medal of the American National Tuberculosis Association. This medal is given annually to the person who has made the most meritorious contribution to the knowledge of the cause, prevention, and treatment of tuberculosis.

ROYAL SANITARY INSTITUTE.

ANNUAL CONGRESS.

THE thirty-ninth congress of the Royal Sanitary Institute will be held at Plymouth in the Guildhall and Council Chamber by invitation of the municipal authorities during the week ending July 21st. Delegates have been appointed by the principal Government departments dealing with health and sanitation, while all parts of Great Britain will be represented by sanitary authorities, societies, and universities. Representatives from our dependencies, from the United States, and the principal countries of Europe will also be present. The reception room will be opened in the St. Andrew's Abbey Hall at noon on Saturday, July 14th, and on the following day, Sunday, there will be a service at St. Andrew's Church in the morning and one at the George-street Baptist Chapel in the evening. Following the reception of members and delegates by the Mayor, there will be a public luncheon in the Royal Hotel, at 1 P.M. on Monday, July 16th; the opening of the Health Exhibit will take place in the Drill Hall in the afternoon, and the inaugural address will be given by Viscount Astor, the President of the Congress, in the Guildhall, at 5 P.M. The work of the sections will be spread over the following Tuesday, Wednesday, Thursday, and Friday, the Presidents being: Preventive Medicine, Dr. L. Rajchman, Medical Director and Secretary of Health Committee of the League of Nations; Maternity and Child Welfare, including School Hygiene, the Viscountess Astor, M.P.; Personal and Domestic Hygiene, the Mayoress of Plymouth; Hygiene of Food, the Prime Warden of the Worshipful Company of Fishmongers; Hygiene in Industry, the Rt. Hon. Ramsay MacDonald, M.P. Other sections include veterinary hygiene, engineering, and architecture, and there will be conferences by representatives of port sanitary authorities and National Health Insurance societies as well as of medical officers of health and health visitors. Among the large number of important subjects to be discussed are: tuberculosis, scarlet fever and measles, puerperal fever, fœtal mortality and injuries, the rheumatic child, the influence of environment on the mental health of the child, factory conditions, cremation, housing, and humane methods of cattle slaughter. A popular lecture will be delivered on the evening of Friday by Prof. W. E. Dixon, of the Pharmacological Laboratories, Cambridge, the subject being Poisoning in Daily Life. Both on Friday and on Saturday there will be excursions to various places of interest in connexion with health and sanitation. The offices of the Institute are at 90, Buckingham Palace-road, London, S.W., and the local offices are at the Town Hall, Stonehouse, Plymouth.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXXIV.—TREATMENT OF MIGRAINE.

MIGRAINE may be defined as a periodically recurring nervous disturbance of which the essential element is headache. But in its classical form it presents a much more complex syndrome; the headache is usually unilateral, and in at least half the cases is preceded by symptoms indicating disorder in localised portions of the cerebral cortex of the side on which the headache is situated; the headache is accompanied by nausea, and after a number of hours vomiting occurs, and this ushers in the last stage of the attack which typically comes to an end in sleep. This symptom-complex is frequently accompanied by a slight mental change and most commonly this takes the form of irritability and depression. The symptoms of localised cerebral disturbance are usually of a sensory nature; hemianopia is the commonest and with it often go scintillating spectra in the dim half of the field; next in frequency come paræsthesiæ in one side of the face and tongue and in the corresponding hand and arm, while auditory disturbances, vertigo, and slight aphasia are not very uncommon. Motor disturbances in migraine are extremely rare, and apart from vague ephemeral pareses of the fingers the only kind of paralysis that is encountered is a palsy of one or more of the oculo-motor nerves. The occurrence of such a palsy during a migraine attack constitutes the so-called ophthalmoplegic migraine. It is only in very rare cases that this complication occurs, but when it does the patients may suffer from it with many of their attacks; the paralysis lasts a few days or even weeks, and diminishes gradually only to be renewed with the next paroxysm. Another atypical form of migraine results from a variation in the quality and perhaps also in the site of the pain, so that instead of being a unilateral headache it becomes a neuralgia in the cheek or temple.

Ætiology and Diagnosis.

Migraine is often hereditary; in a large number of cases it comes on at or before puberty, and in 80–90 per cent. of cases it has begun by the time the subject has reached the age of 25. Many sufferers have their own convictions in regard to its causation, but these views are very divergent, and it must be admitted that we simply do not know the cause or nature of this ailment. There is, however, almost a consensus of opinion that it arises in some way from a functional disorder of the vegetative nervous system; this view accounts for the close association between the onset of attacks and disorders of the alimentary canal, while the pallor of most of the patients during their attacks certainly indicates that the vaso-motor system is involved. If this theory is correct the action on the cerebral cortex whereby the sensory symptoms are produced must be a very indirect one, since the cortical blood-vessels are devoid of vaso-motor nerves. Another theory is that the foramen of Munro on one side becomes blocked and that the cerebral symptoms are a consequence of the distension of the hemisphere that results from the continued secretion of cerebro-spinal fluid into the closed lateral ventricle. Some writers, notably F. G. Crookshank, have regarded migraine as a psychoneurosis, but this suggestion has not found wide acceptance, and it seems inadequate to account for such a symptom as ophthalmoplegia.

The sensory accompaniments distinguish migraine from other forms of headache, and if they are absent its unilateral distribution and the paroxysmal nature and definite course of the attack usually make its nature apparent. The headache of cerebral tumour or intracranial syphilis is almost always more general, and the patient rarely has such intervals of absolute

freedom. A commencing occipital lobe tumour may give rise to attacks of headache with hemianopia and scintillations, but the sudden onset and abrupt cessation of these attacks is unlike the course of migraine, and eventually a convulsive seizure or the onset of papilloedema may make the diagnosis clear. Similar symptoms may occur in certain cases of epilepsy, and here, as in cases of tumour, the occurrence of a fit may show that the ailment is not migraine. The onset of an ocular paralysis in a case of supposed migraine calls for the most careful revision of the diagnosis and a thorough examination of the nervous system, for ophthalmoplegic migraine is a rare condition and the causes of headaches with ophthalmoplegia are many; migrainous neuralgia is commonly mistaken for tic douloureux, but it is not brought on by washing the face, nor by eating or talking; moreover, the pain is less intense and has a less precise distribution; migrainous neuralgia is accompanied by nausea and occurs in subjects who have previously suffered from more typical migraine.

Treatment between the Attacks.

The more specific treatment involves: (1) the use of drugs acting on the vegetative nervous system, (2) general nervous sedatives, and (3) the correction of ocular refractive errors; general measures are also of great importance.

Of the drugs which act on the vegetative nervous system those most in vogue are nitroglycerine and thyroid; calcium lactate has also been credited with good results. Nitroglycerine is best given in the form of liquor trinitrini, of which doses of ½–1 minim are to be taken in acid solution three times a day; it may also be given in the chocolate tablets (each = gr. 1/100), half a tablet or a whole tablet being taken thrice daily. The administration of these doses is to be continued over long periods except during the actual migraine attacks when it should be stopped. Nitroglycerine was extensively used by Gowers, and is still the most widely efficacious remedy; some patients obtain complete relief from it alone. Thyroid, unless there is any indication of thyroid deficiency, is sufficiently exhibited in a dose of grs. 2 of the dry extract taken at bed-time; it probably acts as a general metabolic stimulant. Of the drugs regarded as general nervous sedatives luminal is undoubtedly the best; gr. 1–1½ at night or gr. 1 night and morning, is sufficient. It is best given in tablet because it has a low solubility, and because the soluble compound (with sodium) is not nearly so efficacious. With the less severe types of migraine great reduction in the frequency and severity of the attacks may be obtained from luminal and thyroid without recourse to liquor trinitrini. Bromides are in frequent use and are often combined with salicylates.

The degree to which ocular trouble can be held responsible for migraine is a matter of controversy, but there is no dispute that the sufferers are mostly educated people who read a considerable amount and in whom consequently any astigmatism, heterophoria, or muscle imbalance is likely to be the source of a particular fatigue. It is therefore essential that at the very outset of treatment such conditions should be carefully tested for and, as far as possible, compensated. Gross refractive errors play less part in practice, since among such patients they have nearly always received attention at an early age.

General Measures.

The frequency of attacks is so much affected by the patient's general health that no possible adverse influence can be neglected. The condition of the bowel is naturally the first care. Any tendency to constipation must be effectively treated, and even though constipation be not present benefit is derived from a morning saline. A minute dose of magnesium (or potassium) sulphate, not sufficient in quantity to produce any unpleasant action on the bowel, is perhaps the most efficacious, but one of the more palatable effervescent salines may often be substituted. Even a glass of water taken regularly in the morning is helpful. One of the mildly aperient spa waters may be drunk in quantity before meals throughout the day, and in severe cases a course of treatment at a spa is to be recommended. When an attack is thought to be imminent a prompt measure is indicated, such as an effective dose of calomel or a Seidlitz powder. Late hours, stuffy rooms, and fatigue are to be avoided, and sufficient exercise and fresh air must be obtained. The tonic effect of a holiday may procure an unwonted period of freedom; many patients find that unless they have a game of golf regularly at the week-end their headaches increase in frequency and severity, and probably in such cases the exhilaration of the game and its surroundings count at least as much as the exercise. In women anæmia and dysmenorrhœa require careful attention, for the migrainous subject rarely endures a painful menstrual period without an attack. Local infection in the tonsils or in the appendix should be thoroughly treated, and any obstructive trouble in the nose rectified.

The *diet* should be plain; very many patients regard factors in their food as a precipitating cause of their headaches and are aware of the particular circumstances that induce their attacks. It may be an excess of sugar, or an excess of protein, or purin-containing dishes or condiments or alcohol, or almost any single article of food; such causes vary widely from patient to patient, and consequently it is necessary to treat each case individually. In general, the experience of one patient in regard to diet meets with very restricted success when applied to the treatment of another. The limitation of diet is a measure to be applied in moderation, and only one kind of restriction should be enforced at a time; unless the patient's experience gives some other indication the abolition of sweetmeats should be the first to be tried. In considering the influence of such restrictions it must be remembered that the placing of a veto on any single article of diet has the effect of making the patient more careful in regard to his diet as a whole, and consequently benefit may ensue which is not a specific result of the prescribed limitation.

In short, in dealing with migraine, the rule is to review minutely with each patient his diet, conditions of work, and general mode of life, and to endeavour to discover and correct any circumstances by which headache is likely to be induced.

The Attack.

The attack of migraine, once established, is difficult to dispel. If there are prodromal symptoms which the patient recognises the attack may in some cases be aborted or greatly reduced in severity by a dose of calomel or a Seidlitz powder and full doses of aspirin, or one of its congeners, every 2–3 hours. In addition to official remedies there are many analgesics, mostly of the coal-tar group, on the market (e.g., veramon, arcanol, migranin, analgit). Most of them are of value and a patient may find a particular combination which suits him better than the others. These palliatives enable many patients to continue work during the attacks. One of the features of migraine is a peculiar irritability of the sensory systems and all who suffer from the more severe forms go to bed and endeavour to shut out light and noise and to have absolute rest. Some ask only to be left alone, and certainly the first rule is not to disturb the patient with much treatment. The analgesics mentioned may bring a little relief; some patients take strong coffee in addition, some like a compress on the forehead. Little can be done to hasten the climax of the nausea, but when this is reached and vomiting is achieved, sleep usually follows without difficulty. Occasionally chloral or veronal may be required, and in rare cases morphia is used to induce sleep and to enable the patient to retain nourishment in a long-lasting attack.

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Special Articles.

CONCERNING THE PROBLEM OF MOUNT EVEREST.

BY J. ARGYLL CAMPBELL, M.D., D.Sc. EDIN.

(From the National Institute for Medical Research, Hampstead.)

DURING the expeditions to Mount Everest in 1922 and 1924 it was proved that man can climb, although with difficulty, at an altitude of about 28,000 feet.[1] Norton, Somervell, Mallory, and Irvine reached this height. In addition it was proved that man can live, for some days at least, at altitudes above 23,000 feet (oxygen pressure = 9·5 per cent. atmosphere); several of the climbers spent three or four days above this level, whilst Odell spent ten days at 23,000 feet. Somervell, Norton, Mallory, and Irvine slept for one night at about 26,800 feet. Nevertheless, the exhaustion produced by climbing at 28,000 feet is described as fearful, and progress is very slow indeed. Mallory and Irvine lost their lives whilst climbing somewhere above 28,000 feet. It is possible that they were near the summit, 29,000 feet, where the oxygen pressure in the air is only about 7½ per cent. of an atmosphere. It has yet to be proved whether man can climb at this altitude. In recent experiments with animals [2 3 4] I have proved that some mammals —rabbits, rats, and mice—can live for at least seven days under continuous exposure to oxygen pressure at 7½ per cent. of an atmosphere. The animals were resting at normal temperature (15°–20° C.) and were not exposed to the rigors of chilling winds and very low temperatures, such as the climbers experienced. The outline of one of these experiments is given in Table I.

TABLE I.

Thirty animals in Messrs. Siebe Gorman's decompression chamber: 6 rabbits, 6 guinea-pigs (g.-pigs), 6 rats, 12 mice. T. = 15°–20° C.

Barometer mm. Hg.	Av. O_2 pressure in inspired air.		Approx. altitude corresponding to O_2 pressure.	Deaths.	Duration in days.
	mm. Hg.	Atmosphere.			
		Per cent.	Feet.		
600	116	16·6	7,000	—	3
440	85	12·1	15,000	2 mice.	7
400	77	11·0	18,000	—	1
375	72	10·3	20,000	6 mice.	6
320	62	8·8	25,000	1 mouse, 6 g.-pigs.	7
290	56	8·0	27,500	—	1
260	50	7·1	30,000	1 rabbit, 1 mouse.	8

Average loss of weight of survivors = 23·1 per cent.[3]

The animals—6 rabbits, 6 guinea-pigs, 6 rats, and 12 mice—were exposed in a decompression chamber to gradually decreasing oxygen pressure such as might be experienced during a gradual ascent of the mountain. The animals thus had about four weeks to become acclimatised to low oxygen pressure before they were exposed to the lowest pressure (7½ per cent.) equivalent to that at the summit. Of the 30 animals under investigation, only 13—5 rabbits, 6 rats, and 2 mice—survived the experiment and, although they were obviously deteriorating rapidly, they gradually regained normal vigour when again under normal oxygen pressure.

In another experiment 50 normal mice were exposed to low oxygen pressure for 53 days, and on 14 of these days the oxygen pressure was as low as that on the summit of Mount Everest. The barometric pressure was kept about normal in this case; the special closed chamber used has been described elsewhere.[2 3] This experiment was really part of the control for another research to detect the effects of low oxygen pressure on cancer growth in rats and mice; the results for cancer were given in another communication to THE LANCET (April 28th, 1928, p. 828). Of the 50 normal mice tested, 21 died (see Table II.) under the effects of the low oxygen pressure and the others were killed for histological examination.

TABLE II.

Fifty mice exposed to low oxygen pressure for 53 days at normal barometric pressure. T. = 15°–20° C.

Days since beginning of experiment.	Mice alive.	Deaths.	Killed for histological purposes.	Av. O_2 pressure in inspired air.		Average altitude corresponding to O_2 pressure.	Days at Mount Everest level.
				Atmosphere.	mm. Hg.		
				Per cent.		Feet.	
0	50	—	—}	11·6	81	16,000	0
7	50	—	—}				
14	50	—	—	9·8	68	20,000	0
21	50	—	—	9·3	65	22,000	1
28	40	10	—	8·2	57	26,750	3
35	40	—	9	8·3	58	26,500	3
42	29	2	—	8·0	56	27,500	3
49	22	7	2	8·7	61	25,000	1
53	20	2	18	7·2	50	30,000	3
Total ..		21	29	—	—	—	14

Average weight of survivors before experiment = 19·4 g.; after experiment = 15·9 g.; difference = −18·0 per cent.

Numerous other similar experiments were carried out on a monkey, 3 cats, 3 rabbits, 9 rats, and 2 guinea-pigs. Only the rabbits, mice, and rats were able to tolerate oxygen pressure as low as 7½ per cent. for any length of time; the monkey,[3] after a reasonable degree of acclimatisation, was collapsed, although it could be aroused with difficulty. Like the other animals which were unsuccessful, it showed evidence of heart failure, but recovered completely under normal oxygen pressure, regaining its lost weight and growing at the normal rate again.

A few details of pathological changes in some of these animals have been described [2 3 4]; confirmation of these earlier results and fuller information from about 100 animals are now available.

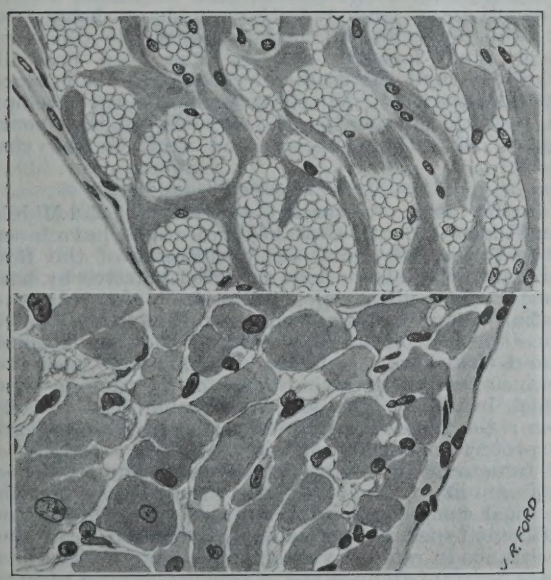
Pathological Effects of Prolonged Exposures to Very Low Oxygen Pressure (7½ per cent.).

All the animals which died under very low oxygen pressure revealed extreme congestion of the liver, of parts of the lungs, and of parts of the heart. Marked congestion was also often seen in the spleen, the kidney, the brain, and the suprarenal; but the liver, lungs, and heart were often markedly affected when the other organs showed only moderate changes. Portions of the lungs were sometimes emphysematous. An extreme degree of fatty degeneration was observed in the hearts and livers of rabbits and guinea-pigs,[4] but only a slight degree—if any—in rats and mice. Nevertheless, in all four types of animal the congestion in parts of the heart and in the liver was so great that there was marked atrophy and even necrosis of the cells. Occasionally œdema was observed in several organs. The congestion was due to failure of normal forward movement of blood, the capillaries appearing engorged with blood and excessively dilated. Perhaps the dilatation in the first place was to help the heart, or it may have meant failure of vasomotor nervous centres. Such failure might be expected under very low oxygen pressure, but if the heart were able to work efficiently under low oxygen pressure there is no reason why the centres should suffer from oxygen deficiency, since the circulation could be accelerated as in exercise. In some animals the engorgement of the organs was so great that an increase in the blood volume was suspected; in others the congestion was not sufficiently widely

distributed to suggest plethora as an embarrassment to the heart. Under low oxygen pressure the red cells increase in number and the viscosity of the blood is thus increased; to counteract this more fluid might be drawn into the circulation, the red cells then increase again, and so on until a plethora results from a vicious cycle. There is also the possibility of the marked dilatation of the capillaries being due in part to the production of histamine-like substances.

The heart muscle-fibres near the epicardium were widely separated from one another by the dilated capillaries and exhibited atrophic changes (see Fig. 1), whilst the liver cells appeared merely as the threads in a network (Fig. 2). The suprarenal sometimes showed atrophy of cortex and medulla, with disappearance of many cells from the latter. The kidney, although sometimes markedly congested, showed but moderate degrees of atrophy and degeneration. In the brain there was often congestion and occasionally disappearance of some of the nerve-cells. Ten of the animals which survived the experiment and were killed for histological purposes showed similar and equally marked changes, but a small majority showed a moderate degree of congestion, while two or three showed scarcely any change from normal; these two or three were apparently able to withstand the very low oxygen pressure. The simplest explanation is that their heart muscle was able to function under very low oxygen tension and to keep the circulation going well. In the animals which succumbed, the symptoms during life and the post-mortem evidence indicated the onset of heart failure as the main cause of inability to tolerate very low oxygen pressure. Undoubtedly all organs must

FIG. 1.

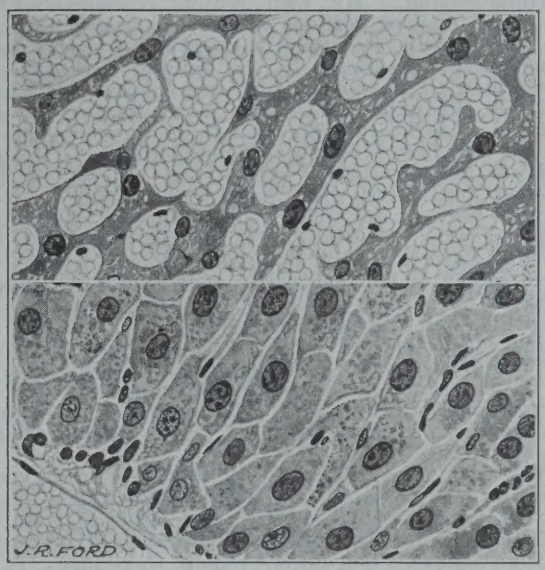


Monochrome drawings of heart muscle near the epicardium of a normal mouse (below), and of a mouse failing to tolerate low oxygen pressure. Note engorgement of capillaries, with effects upon muscle-fibres. Hæmatoxylin and eosin (× 450).

be affected by the abnormally low oxygen pressure, but the supply and pressure of oxygen in the other tissues depend upon the ability of the heart to keep the circulation going strongly. If the heart could do this there was marked power to withstand low oxygen pressure as demonstrated by a few of the animals; if it could not the animals fell by the wayside at an earlier stage with the same pathological changes. These pathological results with animals offer a suitable explanation why climbing at high altitudes leads to fearful exhaustion.

Judging from the number of deaths among these resting animals it seems doubtful whether human beings will be able to tolerate such a low oxygen pressure for a period long enough to reach the summit of Mount Everest, and it will be difficult to choose suitable climbers. It is suggested that subjects should be trained for some weeks by spending a few hours daily in decompression chambers and that they should then be tested for their ability to retain their mental and physical vigour in order to carry out the necessary muscular effort while breathing oxygen

FIG. 2.



Monochrome drawings of liver from a normal mouse (below) and from a mouse failing to tolerate low oxygen pressure; note engorgement of capillaries with atrophy of cells. Hæmatoxylin and eosin (× 450).

at about 7½ per cent. of an atmosphere. In this way those who were successful would have the advantage of knowing they could climb under low oxygen pressure such as they would experience on the summit of Mount Everest.

Major Hingston [5] states that all the climbers had dilated hearts; their excessive panting on exertion was probably due to the onset of heart failure. They all showed loss of weight and of appetite at high altitudes. Similarly my animals in the present and previous experiments [3] lost on an average 20 per cent. of their weight, and they were young growing animals. Major Hingston states that the climbers with poor appetite preferred sweet foods at very high altitudes, and I found that the addition of glucose (5 per cent.) to the drinking water increased the consumption of fluid. I found that the animals consumed much less water when exposed to low oxygen pressure. Of course, mountaineers experience thirst at great altitudes because of the relatively dry air and the large volume breathed; but my experiments prove that low oxygen pressure itself tends to diminish water consumption. Some of the mice were given alcohol (2 per cent.) in the glucose solution and others adrenalin chloride (1/100,000, Parke, Davis and Co.) freshly dissolved in glucose solution every few days; but none of these substances materially benefited the animals, judging by the average weights of different batches of ten mice.

Acclimatisation to Very Low Oxygen Pressures.

It is not always very clear what is meant by the word acclimatisation. According to Major Hingston,[5] Somervell believed that acclimatisation took place at 24,000 feet even though there was physical deterioration and dilatation of the heart; evidently in this case acclimatisation means absence of the subjective

symptoms of mountain sickness. Perhaps acclimatisation is usually taken to mean maintenance of normal appetite leading to normal metabolism and body-weight.

Dr. J. S. Haldane [6] recently gave it as his opinion that secretion of oxygen by the lung was necessary to explain the great efforts displayed by the 1924 expedition. He holds that in this way the oxygen tension in the tissues is kept near normal in acclimatisation. Prof. Joseph Barcroft [7] supports this view of tissue oxygen tension, but opposes the secretory theory and puts forward various other factors for acclimatisation. My own recent experiments [2 3 4] on tissue oxygen tension, where the oxygen tension in the tissues was actually measured for the first time, gave no support to the opinion that oxygen tension in the tissues is kept near normal; all my animals, including those which acclimatised well, showed a markedly subnormal tissue oxygen tension under very low oxygen pressures in the air. In my opinion acclimatisation means the ability of the tissues, particularly the heart, to tolerate a low oxygen tension and to function normally. Acclimatisation takes place far too rapidly in some cases to be explained by such slow changes as increase of hæmoglobin and of red cells, or alteration of oxygen dissociation curve. It is not argued that increased breathing, increase of hæmoglobin, &c., are not of value when they do occur; no doubt they are, but they are not capable of bringing the oxygen tension in the tissues to normal again whilst under very low oxygen pressures in the air. The main factor deciding the power to tolerate very low oxygen pressure is the heart muscle.

It is well known that short spells of very low oxygen pressure are tolerated by certain individuals—e.g., air pilots and other experimental subjects. Major Hingston records that birds flew up around the camp at high altitudes but did not remain there long. It is the prolonged periods of exposure which slowly work their harmful and more than temporary effects. The longer the climbers are exposed to very low oxygen pressures the smaller will be their chance of reaching the summit, however expert climbers they may be. Perhaps the daily inhalation of oxygen at normal pressure for a few hours—as suggested by Dr. Leonard Hill—when above 15,000 feet might inhibit, to some extent, these evil effects. The failure of oxygen in the previous expeditions was perhaps due to the fact that damage to the heart had already occurred and a short spell of breathing purer oxygen could not be of any great use. What the climbers required was complete rest under higher oxygen pressure for a longer period, and not further climbing efforts at a higher altitude hampered by an oxygen apparatus.

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CARLISLE INFIRMARY AND THE FEVER HOSPITAL.—The result of an inquiry by Mr. W. F. Fox, of the Charity Commission, into the question of transferring control of the Fever Hospital to the Carlisle City Corporation has now been announced. It may be recalled (see THE LANCET, June 16th, p. 1239) that the governing body of the Cumberland Infirmary, which is in urgent need of extension, was opposing the transference, as the infirmary would then lose its only feasible means of extension. The Charity Commission reports that the inquiry "failed to disclose any practical alternative to the scheme proposed in respect of the Fever Hospital, or to show that the scheme will place the Infirmary in any worse position than at the present." The Commissioners will therefore proceed to complete and establish the scheme, to the great regret of the infirmary governors.

BRITISH EMPIRE CANCER CAMPAIGN.

ANNUAL REPORT.

THE report of the year's work was presented by the Grand Council of the British Empire Cancer Campaign at the annual meeting held at the House of Lords on July 9th. A steady development of activities is recorded. The number of research workers subsidised had been substantially increased, larger grants have been made to institutions, and new centres have been started, notably in Manchester, Liverpool, and Chester.

The Council in an introductory review of the work in progress comment on the difficulty, familiar to all bodies who propose to subsidise research on a large scale, of finding a sufficient number of suitable workers. They express the hope that the International Conference on Cancer, which will meet under their auspices on July 17th in London, will assist in coördinating existing knowledge of cancer problems by enabling English and foreign workers to exchange views on a common footing. Summaries under appropriate headings of the results of research carried out during the year under the auspices of the campaign appear over the signature of Mr. J. P. Lockhart-Mummery, the honorary editor of the report. These general summaries serve to show how wide is the scope of the investigations being made, but they would be more useful if documented by references to the names of workers or of institutions, or to the pages in the report where results are recorded.

During the year efforts have been directed towards the production of immunity against cancer, and to the perfection of the technique of making records of the behaviour of malignant cells in tissue culture. Chemotherapy and radiotherapy have been tried experimentally and on the human subject. The virus theory put forward by Gye has been critically examined, and the study of carcinogenic substances has been pursued. We select for notice the attempts to produce immunity, the studies of therapeutic agents other than surgery, and work on the virus theory.

Attempts to Produce Immunity.

In the Cancer Research Department of the Middlesex Hospital Dr. S. L. Baker and others have inoculated fowls with emulsions or filtrates of the Rous sarcoma, which have been rendered inactive by heat, formalin, or ultra-violet radiation. No definite or lasting immunity has been thus obtained. Prof. S. Russ and his colleagues, working in the same hospital, found that normal rats can be effectively protected against tumour growth by means of tumour tissue which has been exposed to a suitable dose of radiation; the same tissue which can cause a high degree of protection when fresh can cause some stimulation of tumour growth when autolysed. The production of immunity in this way is a process very sensitive to local conditions and very easily disturbed. Four different types of tumour have been used to produce resistance in rats, two carcinomas and two sarcomas. Rats resistant to one type of sarcoma proved resistant to the other type, and mostly also to a hæmorrhagic quickly-growing carcinoma, but no cross immunity was established between the other carcinoma and the sarcomas. Dr. J. C. Mottram, of the Radium Institute, found that chickens in which skin tumours had been made to disappear by radiation were sometimes immune to subsequent inoculation. At the Lister Institute Dr. T. Lumsden has attempted to produce a tumour vaccine by injecting into a tumour a dilution of formalin just adequate to kill the cells while producing little alteration in their chemical constituents. He states that in the last series of 40 rats thus treated 38 were cured of implanted tumours, and of these 36 were afterwards found to be immune. He suggests that concentrated antiserum may be even more effective than formalin, but it is more difficult to obtain. This form of treatment has not yet been tried on spontaneous tumours except in one case.

A rat with a spontaneous mammary tumour was treated with three inoculations of 2 c.cm. concentrated antiserum from a human subject with breast cancer; the tumour disappeared for four months, but then recurred. Dr. Lumsden hopes to be able to make further trial of this treatment on spontaneously occurring tumours. At the University of Edinburgh Mr. J. J. M. Shaw has attempted to determine whether autogenous epithelial implants will protect mice from the production of tumours by applications of tar. The experiments suggest a slight measure of protection, but are not conclusive. Mr. F. C. Pybus and Mr. H. R. Whitehead, working at Newcastle, failed to demonstrate a serum specific against malignant cells growing in vitro. Mr. Harold Burrows is examining the mode of action of various cytolytic agents in connexion with immunisation.

Tissue Culture.

Besides those who have used the method of tissue culture in their researches on the production of immunity many others are now employing this technique. At the Middlesex Hospital factors influencing the rate of growth of embryo, adult, and malignant tissues are under test, and permanent records are being made by the cinematographic process. At St. Bartholomew's Hospital Dr. Malcolm Donaldson and Dr. R. G. Canti have been studying the action of irradiation respectively on normal and malignant cells in tissue cultures with the cinematographic apparatus designed by the latter. They hope by this means to elucidate the laws governing the disappearance of malignant growth under the action of radium. Mr. E. Neville Wilmer at Manchester has, with Mr. L. P. Kendal, investigated the properties of the growth-activating principles in Witte's peptone. Contrary to the results obtained by Carrel they found that the pure proteose fraction was inactive in saline media.

Therapeutic Methods.

At the Cancer Hospital (Fulham-road) the blood-picture during the clinical application of X rays has been studied. The conclusion is reached that dosage should be controlled by blood-counts, since overdosage is dangerous. Patients vary in their resistance to radiation, and repeated doses at short intervals appear to exercise little influence on the blood until the "saturation point" is reached, when a sharp diminution of the white cells occurs. The change in the blood is likely to progress when once initiated until a minimum value is arrived at, after which, if no further treatment is given, the blood-picture returns to normal; but if the initial dose has been too large the patient may not recover. The effect of a dose administered at the crucial stage when saturation point has been reached is not easy to calculate, and this is a defect in a mode of treatment which nevertheless is said to be used successfully in an increasing number of patients. The combination of radiations of various wave-lengths is said to be giving encouraging results in the treatment of superficial cancers.

Lead treatment of cancer has been tried at various institutions. Workers at the Middlesex Hospital, after strictly controlled animal experiments, arrived at the conclusion that even when this treatment was begun within five days of the inoculation of a tumour no appreciable effect could be observed on its progress. The result of blood analyses on human patients treated by this method showed a consistent rise in the non-protein-nitrogenous content; in cases examined after death the blood-urea had risen to abnormally high levels. From St. Bartholomew's Hospital the report on this treatment is even more unfavourable. No evidence was obtained that the use of lead by intravenous injection leads to the resorption of neoplastic tissues in man; the average duration of life after treatment was less than the expectation of life without such treatment; and the histological appearances of the growth before and after treatment were indistinguishable. A series of cases treated by lead followed by deep X ray therapy gave more encouraging results, but it is not clear to which of the agents the improvement, when it occurred, was due. In Birmingham a team consisting of Dr. A. P. Thomson and Dr. G. Bulmer, Dr. F. W. Mason Lamb and Mr. G. Sanders, M.Sc., have treated 34 patients with colloidal lead. It is not stated whether these were inoperable when first seen. Two cases were markedly improved, three slightly improved, and five remained stationary; three deaths might be attributed to the treatment. The conclusion reached was that the method is of distinct therapeutic value, and a suggestion is made that the most profitable results will be obtained in cases where palliative incomplete operations have been performed. Dr. F. D. M. Hocking, working at Westminster Hospital, reports favourable changes in cases of carcinoma (not in sarcoma) following injections of thorium and uranium.

Radium.—Among the accounts of treatment is a report from the Westminster Hospital stating that "the treatment of oral cancer by radium has practically displaced surgical treatment." The Cancer Research Committee of the London Association of the Medical Women's Federation have had good results with radium in uterine cancer, especially in cancer of the cervix. St. Bartholomew's Hospital Radiological Cancer Research Department consider that it is too early to draw conclusions from the condition of the cases treated, but they pronounce that in breast cases the results of radium have been "very promising indeed," and that the results in cancer of the upper air passages and uterus show a marked improvement on those reported in previous years. A hopeful sign is that no patient reported "free from signs of disease" in previous reports has yet developed a recurrence. In Birmingham, of 26 cases of inoperable cancer of the rectum treated by radium five are definitely improved, two being completely well at present; the time that has elapsed since the treatment was given is not here recorded.

The Virus Theory.

At the Cancer Hospital Research Institute, under the direction of Prof. A. Leitch, the Rous tumour has been transmitted to fresh fowls by the inoculation into the pectoral muscle of the minced pancreas, free from metastases, from a tumour-bearing bird. Control inoculations with a composite mince of liver, spleen, kidneys, and muscle from infected birds did not yield positive results. In other experiments, following Gye's technique, an extract from the Rous sarcoma was treated with chloroform sufficient to destroy the "virus"; a quantity of this extract was then injected into the pectoral muscles of one side of a fowl and about half of the quantity injected into a corresponding region of the other side, together with a portion of minced pancreatic extract from a normal fowl. Tumours were produced only from the side where pancreas was injected. Since, according to Gye's theory, the chloroformed extract contained only the accessory chemical factor, the cancer virus would have had to be supplied by the normal pancreas. This experiment, therefore, provided evidence against Gye's theory and led to the further study of the active principle. Some support was obtained for the view that the active agent of the Rous sarcoma may be enzymatic in nature. The difficulties of interpretation are increased by the fact that no means exist for separating viruses from enzymes. Workers from the Middlesex Hospital consider that the evidence that the Rous sarcoma is due to a filtrable virus seems good. No definite evidence has been obtained that mammalian tumours contain a virus, though Gye's experiment in which chloroformed Rous tumour filtrate is activated by a "culture" of a mammalian tumour has been repeated. The activating effect of fluid containing pieces of mammalian tumour may be due either to the addition of a ferment, or of some non-specific substances, to an attenuated Rous virus, rather than to the addition of a fresh virus of mammalian origin. In Edinburgh Mr.

C. F. W. Illingworth is carrying out a critical repetition of certain of Dr. Gye's researches.

Financial Position.

Owing to the gift of £10,000 from an anonymous donor the income of the campaign this year has exceeded the expenditure. Attention is drawn to heavy commitments for the future, notably the publication of the *Cancer Review*, which is now a permanent feature of the campaign's work, and has to be provided for over a period of five years at a total estimated cost of £15,000. The cost of the journal for the present year amounted to £2538, administrative expenses to £2676, cost of appeals to £2673; grants to hospital and research workers accounted for £18,158.

The public are reminded in the report that no claim to have discovered anything important bearing on the cure or prevention of cancer is left uninvestigated, and that no proper appeal for assistance is refused without careful consideration.

MATERNITY AND INFANT WELFARE.

NATIONAL CONFERENCE AT GUILDHALL, LONDON JULY 4TH–6TH.

A CONFERENCE promoted by the National Association for the Prevention of Infant Mortality, in coöperation with the M. and C.W. Group of the Society of M.O.H.'s, was held from July 4th to 6th in the Guildhall, London, under the auspices of the Central Council for Infant and Child Welfare. There was a large attendance of delegates including representatives from the Dominions and other countries. The first day of the meeting was devoted to visits to child welfare institutions. The actual conference was carried through in four sessions on the second and third days.

Relative Values.

Sir ARTHUR STANLEY presided over the opening session on the relative value of intensive methods employed for the reduction of infant mortality. Sir GEORGE NEWMAN, the President of the Conference, in an introductory address, showed how much the movement for the welfare of mothers and children had depended on the pioneer efforts of voluntary workers.

Sir TRUBY KING (New Zealand) gave an interesting comparison between Holland and New Zealand. In Amsterdam the infant mortality was about 50, the mortality in the first month was 13, and for the remaining 11 months of the year 37, while the maternal mortality from childbirth was about 2 per 1000 births. In New Zealand the infant mortality was about 42, the mortality in the first month being 28 and in the remaining 11 months 14, and the maternal mortality was 5. New Zealand had concentrated on the child while Holland had concentrated on the mother, and achieved its good maternal and neonatal rates by well-trained midwives and a good obstetrical service. In New Zealand they were now devoting their attention to the obstetrical service, and they hoped that, as a result, before long their total infant mortality-rate would be under 30.

Dr. ERIC PRITCHARD (London) referred to the great variation in the neonatal mortality-rates in the various districts in this country as indicating that a large proportion of these deaths were preventable. He referred especially to the competition, promoted by the *Daily News* under the ægis of the National Baby Week Council, among the districts, which could show the largest percentage reduction in the neonatal rate of 1927 when compared with the average rate for the years 1922–26. Of the districts with populations of 100,000 and upwards Leyton won the first prize with a neonatal rate of 18 in 1927 and a percentage reduction of 10; and Bethnal Green won the second prize with a rate of 20 and a percentage reduction of 7. The two highest neonatal rates in this group were South Shields C.B. with a neonatal mortality-rate of 42 and Oldham C.B. with a neonatal mortality-rate of 48·6. Of the districts with populations between 100,000 and 50,000, Finchley U.D. won the first prize with a neonatal mortality of 12·7 for 1927 and a percentage reduction of nearly 15, and Bath C.B. won the second prize with a neonatal mortality of 21—a percentage reduction of 12. The highest neonatal rates in this group during 1927 were Barnsley with 36 and Wigan with 39. In answer to a questionaire most of the competitors hesitated to attribute the decrease of neonatal mortality to any one particular factor, but suggested a combination of causal factors, such as improved child welfare administration, increased efficiency of health visitors, improved housing, and a better midwifery service. Dr. Pritchard concluded by expressing his strong belief that much more could be done by applying the knowledge we had obtained from the feeding of animals to securing a satisfactory diet for expectant and nursing mothers.

Dr. S. G. MOORE (Huddersfield) described the scheme which had been in operation for some years in a special district of Huddersfield and which was now to be applied to the whole borough. The essentials of the scheme are the visitation of expectant mothers and the babies, after they are born, by whole-time women doctors, and an endeavour to secure continuous nursing, day and night, when necessary, for sick babies in their own homes. In 1912–14 the infant mortality-rate in the special district was 111 and in the rest of the borough 101. In 1921–23 the rate in the special district was 72 and in the rest of the borough 80. In 1921–26 the rate in the special district was 69 and in the rest of the borough 79. Among the 4721 women whose pregnancy was notified and supervised during the years 1917 to 1924 the maternal mortality from childbirth was 1·87 per 1000 births, as compared with a maternal mortality of 5·67 for the mothers whose pregnancy was not notified and supervised.

Dr. A. HAMILTON WOOD said they had 36 centres in Warwickshire, all under voluntary management, but they needed double the number. He advocated motor transport for the health visitors, the conduct of antenatal clinics by doctors who were not in practice, and more maternity hospitals, and thought it was a great pity that the Ministry, for financial reasons, had been obliged to cut down the supply of free milk for expectant and nursing mothers.

Dr. T. Y. FINLAY (Edinburgh) thought that so far antenatal work in Edinburgh had reduced maternal mortality more than neonatal mortality.

Maternal Morbidity.

At the second session was discussed what Lady BARRETT, who presided, described as the "failures of midwifery."

Prof. BECKWITH WHITEHOUSE (Birmingham) referred to the low maternal mortality-rate of 1·3 per 1000 births attained by the Queen's nurses in their attendance on 55,960 maternity cases during 1927. Certain extern departments of maternity hospitals also had a rate of less than 2. He thought these results were obtained by efficient organisation, antenatal supervision, absence of hasty interference during labour, and surgical cleanliness. He summarised his recommendations as follows: (1) the trained nurse-midwife should attend all normal obstetric cases; (2) antenatal supervision and the decision as to when a case was normal or abnormal was the duty of the medical profession; (3) antenatal centres should be available in all areas, at which the general practitioners should attend to see their own patients and also those submitted by the midwives in the area; (4) the antenatal centres should provide sterilised obstetric outfits, to be paid for by the patients or out of the maternity benefit; (5) panels of obstetric specialists should be available for the help of the practitioner, not only for puerperal pyrexia, but for all complications; (6) in-patient maternity departments should be established in all hospitals for the investigation of difficult antenatal problems and the management of grave obstetrical complications. He thought that

normal cases should be attended in the homes and that hospital beds should be chiefly reserved for primiparæ and complicated or "borderland" cases.

Dr. F. T. H. WOOD (M.O.H., Bootle) thought it would be difficult to work an antenatal clinic conducted by general practitioners in towns, and Dr. Whitehouse in reply urged the extreme importance of interesting the general practitioner in antenatal work and suggested that Dr. Wood's objection might be met by the holding of more frequent clinics.

Dr. HELEN MACMURCHY (Canada) said that 641 replies made by the 8000 practitioners of Canada to a Ministry questionaire indicated that many practitioners had solved this question for themselves. One practitioner had had no maternal death in 37 years and many had had no deaths among a series of 1000 cases.

Mr. K. M. GRANT (Salford) urged that doctors should work only with trained midwives at confinement cases.

Prof. LOUISE MCILROY (London) spoke on the great importance of postnatal clinics to ensure that everything possible was done to repair damage left by the confinement. She described a "Discharge card" issued by the Royal Free Hospital to every woman who left the lying-in wards. The card gives particulars of the character of the labour, the condition of the mother and infant on leaving, &c., and is intended to be taken by the patient to any clinic (or doctor) which she may attend subsequently. Most so-called diseases of women were due to confinements. Lacerations were inevitable, but their repair was most important. She believed that cancer of the cervix, which took a larger toll of women's lives than childbirth, could be to some extent prevented by careful postnatal supervision. The antenatal doctor leaves the confinement to the midwife, but the midwife should send the patient back to the doctor for overhaul after the confinement. If each mother was supplied with a card or obstetrical "dossier" recording all her pregnancies and confinements it would save an enormous amount of speculation on the part of medical attendants.

Prof. PIRQUET (Vienna), who was invited to speak, referred to the work done by the League of Nations Committee in the investigation of the causes which led to the very different mortality-rates in the various countries. He said that Norway led Europe with an infant mortality of about 30 and that Oslo led also in birth control, but that they had gone too far in this latter respect, the birth-rate being less than a quarter of what it used to be. He could sympathise with birth control after the sixth or seventh child, but not as regards the first. He regarded the tendency to avoid having children as a mere fashion, which would pass away. The birth-rate in France was now going up a little. The resident population of the U.S.A. had few children, but there was some evidence of a change of viewpoint, and the desire for the first child was being put before the desire for a car. One of the important points in which the public needed education was the protection of the lying-in mother and her baby from catarrhal infections brought in by neighbours.

Dr. ESTHER RICKARDS said they had the advantage in Tottenham of a unification of the public medical services. The midwives were being induced to send back the mothers to the clinic for postnatal overhaul. One-third of the women examined at the antenatal clinic came back to her about four weeks after confinement and 50 per cent. needed some treatment. Health visitors can also persuade the mothers to come to the clinic. Coöperation with the midwife was most important. Infant cards, school cards, antenatal cards, and confinement dossiers should be passed on, completing the cycle.

Maternal Mortality.

Dr. EARDLEY HOLLAND (London) opened the discussion on the causes and prevention of maternal mortality at the third session, presided over by Dr. ELWIN H. T. NASH. The safening of child-bearing should, he said, be the outstanding problem of public health. In spite of the able reports on the subject issued first by the Local Government Board and more recently by the Ministry, they had not yet captured public opinion. Other countries beat us—for example, Holland, Denmark, Sweden, Norway, and Italy—all with rates under 3 per 1000. Some countries were worse than we were—Switzerland, Germany, and the U.S.A. Sepsis accounted for about 40 per cent. of the deaths and 70 per cent. of the septic cases were complicated labours. He had recently had the opportunity of investigating conditions in Sweden. The Swedish maternal mortality had remained at about 2·5 per 1000 births during the last 25 years, in spite of efforts to reduce it still further. Contracted pelvis was rare in Sweden and toxæmias were less frequent than here. In Sweden the medical curriculum lasted nine years and the medical students had four months' residential training in midwifery in large hospitals manned by experts, in which there were no midwives trained, the medical students doing all the midwifery work. The midwives went through two years' training also in large maternity hospitals in which there were no medical students. The antenatal work in Sweden was done by obstetrical experts. All Swedish mothers were attended by midwives and the doctor was only summoned for complications or to give anæsthetics. The maternity hospitals were splendid and 30 per cent. of the women were confined in them last year. The number of practising midwives was becoming less as more mothers went into hospitals for confinement. Midwives in Sweden have been trained since 1680, their training is founded on a very good education, and the service has great traditions. Both the midwifery and medical professions enjoy much greater prestige in Sweden than in this country. This confidence in the midwives and doctors abolishes the fear towards child-bearing which is so prevalent here and which is inculcated in our prayer-book and certainly affects the proper performance of the function of child-bearing. He thought, if we gradually reorganised our obstetric service on the lines adopted in Sweden, we might ultimately halve our maternal mortality and save 1500 lives of mothers annually in addition to preserving the health of very many more. Up to now our efforts had been utterly futile.

Dr. R. VEITCH CLARK (M.O.H., Manchester) said that maternal mortality involved maternal morbidity and neonatal mortality, besides being a lamentable destroyer of home and family life. Fifty per cent. of gynæcology was concerned in repairing the damage done by child-bearing. In spite of the fact that Manchester lost half the sunlight available in the neighbourhood, nowadays they only saw rickety deformities in adults, and we could look forward hopefully to the disappearance of pelvic deformity as a cause of death in child-bearing in another generation. The remedies for high maternal mortality —viz., antenatal supervision and a better midwifery service—were rendered difficult to obtain by the fact that the expectant mother does not know she needs them. Nurses, health visitors, and midwives are those who can best educate the mothers. The midwife should be guaranteed her fee if she loses her patient by sending her to the antenatal clinic, and the remuneration of midwives should be raised, if necessary, by subsidies. Investigation in Manchester had shown that privacy for the confinement was impossible in the majority of homes and maternity hospital beds were therefore needed for normal cases. The antenatal centres should be grouped round the larger hospitals. Much further research is required as to the physiology of pregnancy.

Mr. ALECK BOURNE (London) was convinced, as a teacher and examiner of midwives, that insufficient stress was laid on the general principles lying behind the practical details. Quite ineffectual solutions of lysol might take the place of cleanly methods. Rubber gloves, judging by the careless way they were used, were regarded as possessing magical properties. The talk about antenatal work was throwing into the background the importance of recognising abnormalities early in labour. One examination of the urine

at the seventh month was of little or no use. The urine should be tested every fortnight during the last two months of pregnancy, however fit and healthy the patient appeared to be. The occurrence of hæmorrhage, however slight, during pregnancy, was not always regarded seriously enough. The midwife should be paid better and her status advanced.

At the fourth session Dr. JANE TURNBULL (Ministry of Health) described possible administrative arrangements for the unmarried mother and her child.

MEDICINE AND THE LAW.

Medical Confidence (Attempted Suicide).

AT an inquest at Eastbourne, held at the end of last month, upon the body of a man who met his death on Beachy Head, Dr. R. R. Pirrie stated that two years ago he was called in to see the deceased, who had been found unconscious in a gas-filled bathroom. Asked by the coroner if it was not usual in such cases to report the occurrence to the police, Dr. Pirrie replied in the negative. "From the legal point of view," pursued the coroner, "you may be guilty of being an accessory in not notifying a case of attempted suicide?" "Yes," replied the witness, "but I look at it only from the medical point of view; I am prepared to risk being charged as an accessory; in this case the man recovered and I warned the family." In bringing in a verdict of "suicide while of unsound mind," the jury added as a rider that they thought it would have been as well if the doctor had reported the previous incident. Unperturbed by this declaration, which he described as "purely a pious resolution and not part of the verdict," Dr. Pirrie rejoined that a practitioner has a duty to his patients and that it is not his duty to report such a case to the police.

There can be no doubt that the medical profession will approve their colleague's action and statement of principle in this matter. The patient required treatment, not prosecution. The jury, perhaps, held the mistaken view that medical privilege is claimed and maintained in order to save doctors the trouble of taking part in police proceedings. Medical privilege exists in the interests of the patient. The patients, or their families, require the best medical advice and treatment at the moment, and frank disclosure of all the facts may be necessary in order that the medical assistance may be invoked to the best advantage. There will necessarily be some hesitation on the part of the family in these cases if it is possible (or indeed probable) that the doctor may regard it as his duty to set the police in motion and to furnish them with information not intended to be so applied. There may be occasions when a doctor may have the duty of disclosing his knowledge of a crime, or at any rate of putting such moral pressure upon the criminal as he may deem proper with a view to prevention or confession. One case differs from another and a general statement of professional propriety is difficult; but the duty to the patient comes first. In the Eastbourne case Dr. Pirrie's warning to the relatives was of more practical value than a notice to the police. Action by the police might well have aggravated the patient's condition.

Consideration for Medical Witnesses.

By the courtesy of the courts it has been customary to give special consideration to medical practitioners when called as witnesses. It has been realised that the nature of their duties makes it desirable not to keep them in attendance in courts of law longer than necessary, and it has been found possible sometimes to interpose their evidence out of its turn and usually to release them at the earliest moment. It need not be assumed that this convenient course is to be interrupted merely because of some observations of Mr. Justice Horridge at Hereford Assizes last month. Asked by counsel if a country doctor, who had given his evidence, might be allowed to leave the court, the judge is reported to have replied that doctors were very useful people, but they seemed to think that the administration of justice was entirely subservient to their convenience. "There may be one or two questions I want to ask: he must wait." The court, we are told, then adjourned for lunch. No witness, whether medical or otherwise, would regard it as unreasonable that he should remain in attendance until the court had heard the whole of his evidence. Medical witnesses, however, are justified in asking leave to return to their professional duties as soon as their evidence has been fully given unless, of course, the case is one in which they have undertaken to be present throughout and to advise upon the evidence given by others. A proper application to the judge, deferentially submitted, will usually receive a courteous answer. The remarks of Mr. Justice Horridge may either be dismissed as not very seriously meant, or else discounted as mere obiter dicta.

Criticisms of Coroners Acts.

Fresh criticism has recently been directed at the amendment in the law of coroners made in 1926, whereby inquests can be dispensed with. Such cases fall into two classes. First, there are the deaths where the coroner, after his own private inquiries and without any post-mortem examination, has satisfied himself that no inquest is necessary; he then informs the doctor in attendance on the deceased that he sees no objection to the cause of death being certified as suggested. Secondly, there are the "no inquest" cases, within Section 21 of the 1926 Act, where the coroner (1) believes that a post-mortem examination may prove an inquest to be unnecessary, (2) asks a doctor to make a post-mortem examination and report under the new statutory power, and (3) being thereby satisfied that an inquest is unnecessary, sends the registrar "a certificate under his hand stating the cause of death as disclosed by the report." The report in the latter case is not, of course, given upon oath, and those who are critical of the Scottish system of inquiry (shorn of the publicity which the inquest ensures in England) have not hesitated to comment on the change. Dr. F. J. Waldo, in his evidence before the Home Office Committee on Coroners, once laid down the principle that, if a post-mortem examination be necessary, a public inquest with the witnesses on oath, and in the presence of the relatives, was equally necessary. Parliament, however, in 1926 gave the coroners a discretion in the matter, carefully guarded (subs. (3) of Section 21) by the saving clause that the new provision should not be construed as authorising a coroner to dispense with an inquest in any case where there was reasonable cause to suspect that the deceased had died either a violent or unnatural death, or had died in prison or in certain other special circumstances. If the country has thus—through Parliament—shown this sign of confidence in coroners and the medical profession, those who are so trusted need not repudiate their responsibility. If that confidence is found to have been too lightly given, public opinion would doubtless insist on a change in the law. Meanwhile, there is all the greater obligation upon members of the medical profession to be scrupulously careful and exact in matters of death certification. Solicitors, of whom a high standard is expected in proceedings where large sums of money may be at stake, are fortified in the discharge of their duties by the knowledge that they are, by statute, "officers of the Supreme Court." The medical profession has an even greater responsibility.

THE DUCHESS OF YORK AT HOSPITALS.—On Tuesday in last week the Duchess of York opened a new fresh-air ward and an operating theatre at the St. Nicholas Hospital for Crippled Children at Pyrford, Surrey. Also last week the Duke and Duchess opened an extension of the Queen Alexandra Memorial Hospital at Weston-super-Mare which, with its equipment, has cost £50,000.

UNITED STATES OF AMERICA.

(BY AN OCCASIONAL CORRESPONDENT.)

The Minneapolis Meeting: Presidential Address.

THE seventy-ninth annual session of the American Medical Association, held last month at Minneapolis, Minnesota, was made notable by the presidential address by Dr. W. S. Thayer, of Baltimore, an address showing great breadth of vision and couched in beautiful language. Dr. Thayer reminded his audience that they represented a profession organised for no selfish end, but, as their constitution has it, " . . . to promote the science and art of medicine and the betterment of public health." Since it is the unusual which constitutes news, the self-seeking commercialised doctor is the one who is shown most often in the newspapers. Too many of us generalise carelessly from what we read in the papers. " I am not likely to forget," he said, " the response given by a large assembly of physicians in London when the Lord Chief Justice, in a graceful address, spoke of the fundamental likeness between the profession of law and that of medicine, each humane and devoted to the alleviation of the ills of mankind. The audience laughed. I was mortified and pained." Nevertheless, continued Dr. Thayer, to be a physician to-day is a privilege. Few greater opportunities are given for immediate service to our fellows, and for that intimate association with men and women which cultivates human charity and sympathy and understanding and tolerance, one of the most beautiful of words, and temperance, one of the most abused. To make the most of his opportunities a doctor must have a basic education—one that should enable him to appreciate that which is fine in life, in art, and in literature.

Standard of Medical Education.

Through the efforts of the American Medical Association, with its council on education, and the generous assistance of the foundations, the standards of education in the profession have been materially raised until to-day the opportunities for medical education in America, fundamental and post-graduate, are second to none.

" Recently," Dr. Thayer remarked, " we have met with rather severe criticism in the delightful, although somewhat acrid, address of Sir Andrew Macphail,[1] who bitterly complains that the raising of our standards of admission to schools of medicine is flooding some of the institutions of a sister country with undesirable men. To which one can only reply that we are truly very sorry. We should be only too happy to deliver him from the plague of locusts from which we have been delivered ourselves. We did not mean to turn the cloud in his direction. But would he ask us to take them back ? "

The Full-time Plan.

There has been considerable criticism of the so-called full-time plan in this country which did not fail to find some expression at this session of the House of Delegates. Dr. Thayer, however, deprived the critics of most of their thunder by pointing to three main misconceptions on which criticism has been based. It has been said that in some schools a professor is debarred from private consultation. Dr. Thayer knows of no school of which this is true. The understanding that exists in some schools that fees for private consultation shall be turned into the budget of the professor's department has been denounced as the practice of medicine by an institution. This aspect of the plan, Dr. Thayer points out, is in any case a detail, and in no sense a vital principle. Third, and most important, is the misconception that it is the ultimate ideal of the university school of medicine to place clinical teaching in the sole hands of university professors.

[1] Macphail, Andrew: American Methods in Medical Education, Brit. Med. Jour., 1927, ii., 373.

Early Specialisation.

Turning to the content of the four years' course in medicine, Dr. Thayer suggested that the attempt has been made to crowd too much subject matter into these years. The medical school is not the place for the training of specialists, nor can one emerge from a school of medicine a skilled surgeon. The specialist who has not had a good basic medical training is a danger to society. Too early specialisation is one of the great faults of modern American education. The speaker suggested that those responsible for the curriculum of the nurses' fundamental course are perhaps making the same kind of mistake. The tendency of modern practice is more and more towards specialisation and organisation, and away from the obviously desirable intimate contact between physician and patient. This is in line with the trend of society in other fields, but it raises problems of great importance to the profession. In seeking solutions there are certain fundamental truths to be remembered: " We have," said Dr. Thayer, " duties as physicians towards our patients, to treat them when ill, to advise them lest they become ill, and to the public lest the sickness of our patients becomes a menace to the public health. We have duties also as members of the public who are specially informed and so specially responsible to see that our public health officials are men of high character and adequate training."

The attendance at this session of the meeting was almost 5000, and the scientific exhibit easily the largest and most successful on record. The presidential address and most of the scientific papers read at the session will be fully reported in the journal of the Association.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Housing Conditions in Edinburgh.

THE chief sanitary inspector for Edinburgh, in his annual report for the year 1927, remarks on the progressive policy of the local authority in connexion with slum clearance and housing improvement. Much still remains to be done in improving the housing conditions in many parts of the city. A recent survey showed that there were no less than 5035 houses that could be classified as unfit for habitation. These are mainly situated in the central and more congested parts of the city, but there are also large groups in the more suburban areas. Of the total number, 2243 are one-apartment houses, 2327 contain two apartments, 370 three apartments, and the remainder four or more apartments. Many of these houses have been listed for inclusion in future improvement schemes. If the progress made during the past few years is maintained the whole of these houses could be swept away in a comparatively short period. It has been found that to obtain the best results constant supervision of the occupiers of the new houses is essential. Accordingly, in addition to the routine inspection, arrangements are being made for the systematic visitation of the houses by an experienced inspectress who is to devote special attention to backward tenants. These visits have already achieved good results in improving the habits of the people.

In connexion with this report, it is interesting to note that the Board of Management of the Edinburgh Welfare Housing Scheme have recently issued a special appeal for financial assistance in connexion with the housing scheme which they intend to inaugurate in Edinburgh. They aim at a sum of £25,000 to £30,000, to be raised partly by voluntary gifts and partly on debenture loan. If such a sum were raised, or even, to start with, a smaller amount of £7000–£8000, an experimental block of suitable houses could be provided, which would be let at about 8*s.* 6*d.* a week, inclusive of rates. The houses,

when built, would be related to the child welfare activities, municipal and voluntary, of the city, just as many other child welfare activities are already related; the tenants would be selected in view of the need of benefit to young children in the families of the less well-paid wage-earner.

The Effect of Milk on School-children.

The delegates to the World's Dairy Congress held a conference in Edinburgh on July 5th. In the absence of Sir Leslie Mackenzie, Dr. Gerald Leighton, of the Scottish Board of Health, submitted a paper on Milk Consumption and the Growth of School-children, based on experimental findings (see THE LANCET, 1928, i., 202). In November, 1926, the Scottish Board of Health set up a committee to test the effect on 1400 school-children in Peterhead, Aberdeen, Dundee, Edinburgh, Glasgow, Paisley, and Greenock, of a daily ration of milk in addition to their ordinary diet. The experiment has been carefully devised to test the nutrition value of milk, separated milk, and a control food of equal caloric value; the ages of the children tested were from 5 to 13 years. All the children lived at home under the ordinary conditions of Scottish working-class families. The investigation is still in progress, but from the data already available the following conclusions could be drawn:—

(1) The addition of milk to the diet of children of school age during the period under review has been accompanied by an increased rate of growth as indicated by an increase in both height and weight of 20 per cent. greater than that in children not receiving the extra milk.

(2) This increase in the rate of growth has been accompanied by an improvement in the general condition of many of the children receiving milk.

(3) Separated milk is of great value for promoting growth. Its nutritive value for children of school age would appear to be underestimated.

The reports indicated that the children receiving milk appeared to be in better general condition than those who did not receive it. On the whole they had glossier hair, clearer complexions, and even held themselves more erect. The most marked improvement was shown in those children who had been in poor condition at the beginning of the investigation.

Award of the Neiller Prize.

On July 2nd, at a meeting of the Royal Society of Edinburgh, Principal Sir Alfred Ewing, the President, presented the Neiller prize for the period 1925–27 to Prof. Arthur Robinson, professor of anatomy in the University of Edinburgh. The President recalled the fact that, early in his career as an anatomist, Prof. Robinson turned his attention to problems of mammalian embryology, and his first work on the subject was published in 1888. Since that time a series of important papers had appeared from his pen dealing, for the most part, with the development of individual organs in man and other mammals. Of special importance and value were those papers dealing with the early stages of development of mammalian ova. Two of the important conclusions, formulated on the evidence relating to ovarian follicles in the ferret, were afterwards verified in other mammals by the experiments of Prof. Edgar Allen, of the University of Missouri, and by other investigators. During the study of the follicles, Robinson's attention was drawn to the occurrence of prenatal death; with the aid of his own material, supplemented by data provided by the Board of Agriculture for Scotland, he was able to prove that prenatal death occurred with great frequency from causes other than external agencies. The Neiller prize was awarded to him for his recent work in comparative mammalian embryology, and in recognition of his published work extending over a period of 40 years.

Academic News.

The Court of the University of Edinburgh have approved a scheme of rearrangement of the curriculum of medical students in their third year by which the courses now given in two terms will be spread over three. This applies to the systematic courses in medicine and surgery, and to the theoretical and practical courses in pathology, bacteriology, materia medica, and therapeutics. The class examinations will be rearranged accordingly. No increase, either of the total number of meetings of the classes or of the amount of fees payable by the students, is involved.

In consequence of the rearrangement of the curriculum for the Diploma in Tropical Medicine and Hygiene, the diploma is now recognised as a qualification for the posts of junior public health officer in the Colonial Medical Service.

At the recent graduation ceremony at the University of St. Andrews, the Principal referred to the scheme for providing residential entrance scholarships. When the system was fully operative, he said, a steady succession of selected students, unharassed by financial anxiety, would have the opportunity of a Scottish University education, supplemented by the benefits of collegiate residence. The list of these scholarships had recently been increased by an additional award. The firm of Messrs. Tullis, Russell and Co., to which Dr. David Russell belonged, had agreed to contribute £100 annually towards the maintenance of a scholar at St. Andrews, preference to be given to students coming from central Fifeshire.

Public Health Services.

ANOTHER CASE OF ALLEGED OVER-PRESCRIBING BY A PANEL PRACTITIONER.

THE East Sussex Insurance Committee at its meeting on July 3rd had before it a report from its Medical Service Subcommittee dealing with the investigation of prescribing by insurance practitioners and the effect on the medical service of the action of the Regional Medical Officer of the Ministry of Health in criticising the prescribing of a doctor in East Sussex. The facts were similar to those stated in a previous case, some particulars of which were given in THE LANCET of April 14th last (p. 776). It appears that as the result of objection taken by the R.M.O. on general grounds to the cost of a certain proprietary preparation of colloidal iron combined with malt extract, the doctor in question had ceased to order it for his insured patients. The question was raised by a patient who was accepted by the doctor after the period with which the R.M.O. was dealing, so that the latter could not have had before him details of the particular case.

Reviewing the facts, the subcommittee states its opinion that this case confirms the impression derived from the previous case—namely, that the action of the R.M.O. has had the effect of unduly restricting the discretion of medical practitioners in prescribing medicines for their patients, and has tended to create an impression that the insurance medical service is inferior to that rendered to private patients. The procedure laid down by the Regulations in regard to the investigation of prescribing, the rights thereunder both of practitioners and insured persons, and the duties of practitioners, were fully set out in the previous report, and it appears that the statements made and conclusions drawn in that report have not been challenged. The subcommittee therefore recommends the Insurance Committee to inform the practitioner that, in the opinion of the Committee, he should not cease to prescribe for his insurance patients drugs which he believes to be reasonably necessary for their adequate treatment, unless and until the Panel Committee, or the appropriate tribunal on appeal, has decided that the supply of these drugs imposes a cost upon insurance funds which is in excess of what is reasonably necessary for such adequate treatment.

It was decided to raise the question of the principle involved at the meeting of the National Association of Insurance Committees to be held in London next October.

SCHOOL MEDICAL SERVICE.

Name of district.	No. on roll.	Average elementary school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.†
Bedfordshire	—*	—*	4,262	1,872	18·65
Cumberland	—*	—*	7,862	12,590	20·0
Torquay .	3,751	3,280	1,389	5,546	21·0

* Not given. † Excluding dental defects and uncleanliness.

Bedfordshire.

THE value of medical inspection is greatly lessened if no treatment clinics exist where parents can obtain advice and minor ailments receive medical attention. Home visits by the nurses are a valuable adjunct to such clinics but can never satisfactorily replace them. It is therefore disappointing to note under Table IV., "Return of defects treated during the year," that no minor ailment has been treated in Bedfordshire under the council's scheme; this presumably means that no minor ailment clinics exist in this county. The school medical staff consists of Dr. R. T. Herdman, S.M.O., and deputy M.O.H., one school dentist, Mr. F. S. Cooper, and one school nurse.

Dr. Herdman remarks that the health of the children seems to be less good this year than it was last year; he attributes the deterioration partly to an epidemic of influenza in the beginning of 1927 and to the sunless summer and autumn. It is clear, however, that his department is understaffed and that the county lacks the facilities on which some of its neighbours rely for the promotion and maintenance of good health in school-children. Dr. Herdman, working single-handed, cannot do impossibilities, and his dental colleague, Mr. Cooper, obviously finds it increasingly difficult to keep pace with his work. It is curious to find treatment facilities so inadequate. There are apparently no special schools of any kind, and no mention is made of open-air schools or orthopædic schemes. This is surprising and inconsistent, for in other directions great efforts seem to be made on modern lines. For example, the senior scholars who are transported from smaller villages to larger centres there receive a good hot mid-day meal, which is cooked, served, and cleared away by the children; moreover, efforts are made to supply dry stockings and slippers for children who have walked long distances to school.

Cumberland.

Dr. F. H. Morison, M.O.H. and S.M.O., explains that the county is divided into six areas, each in the charge of a medical officer responsible for the whole of the work in the area. He stresses the importance of coördination; in Cumberland record cards of the welfare centres are passed on to the schools and show that the percentage of defects in the entrants would be considerably reduced if it were possible to examine and treat all the infants before they came to school. The proportion of entrants requiring treatment this year is three times as high as last year. These children were for the most part born in 1922, which year had a relatively high infantile mortality-rate in the county and a correspondingly high sickness-rate in the next four years of life.

Dr. Morison discusses in a broad-minded way the problem of tonsils and adenoids, citing a case where the prosecution of the parents by the N.S.P.C.C. for refusing treatment aroused hostile comment. He states that he has always laid down the principle that the mere presence of enlarged tonsils and adenoids is not necessarily an indication for operation, but that in certain cases, particularly those with ear symptoms, it is essential to secure their removal. In the particular instance where action was taken, it was the opinion of three members of the school medical staff and of the family doctor that the operation was urgently needed. Hospital accommodation being inadequate, some cases of surgical tuberculosis have been nursed in frames in their own homes, the children being visited once a week by the orthopædic after-care sister and once in four months by one or other of the visiting staff from Windermere. Advantages claimed for this system are (1) considerable saving in expense (a case of spinal caries in hospital may cost as much as £250); (2) the children can start treatment at once without waiting for a hospital vacancy; and (3) hospital beds are left free for the admission of non-tuberculous cripples, who can be dealt with in a much shorter time. It is admitted that the procedure is often impracticable—in rural areas where close supervision is impossible, where parents are not able to coöperate properly or to provide extra food, and where home conditions do not allow open-air treatment. To us it seems that the system may be of some value as a temporary device but not as a satisfactory substitute for more hospital accommodation, which seems to be urgently needed.

Further reports are given on the benefits of iodine in goitre. Dr. Kenneth Fraser has been elected a Fellow of the Royal Society of Edinburgh for his valuable work in this connexion. This year for the first time calcium is also being administered in the hope of improving the results of treatment.

Torquay.

The M.O.H., Dr. T. Dunlop, introduces the report by Dr. J. V. A. Simpson, assistant S.M.O.

The arrangements for the coördination of the work of the school medical service with that of the health department are satisfactory; and the same medical officer who carries out the routine school work attends the maternity and child welfare centres and thus supervises the health of the children from birth right up to school-leaving age. All the facilities for treatment are available for the pre-school child, including the dental service. The good results of Mr. T. G. Fenton's operations for removal of tonsils and adenoids at the Torbay Hospital are recorded. All cases are seen after operation by the medical officer and instructions are given as to the after-care of the child. Dr. Simpson, who is responsible for this report, would prefer an arrangement whereby hospital after-care could be provided for at least 24 hours; and possibly this may be secured when the new hospital is erected. Cripple children for some years past have been sent to special hospitals in London, Bristol, Alton, and elsewhere. No child failed to receive treatment except when parents refused it (two cases). During the past year a comprehensive orthopædic scheme for the county of Devon has been inaugurated and the Torquay authority is coöperating in this. The school clinic is used as the local orthopædic centre once a week and Mr. Brennan Dyball visits it once a month. The year at the open-air school has been highly successful; during the summer a complete set of baths, including shower baths, was installed. The climate of Torquay is so mild that the children can be out in the open air on more occasions than in most other towns in the kingdom; rheumatic children are apparently receiving much benefit from this school.

Dr. Simpson is using the kata-thermometer for estimating the adequacy of ventilation in existing schools and in those being reconstructed. He is also continuing his research into standards of physical fitness of schoolboys and is opening a new line of investigation on the measurement of the ultra-violet rays of the atmosphere under the guidance of Dr. Leonard Hill.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 30TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 219 (last week, 230); scarlet fever, 1639; diphtheria, 963; enteric fever, 37; pneumonia, 757; puerperal fever, 39; puerperal pyrexia, 103; cerebro-spinal

fever, 9; acute poliomyelitis, 4; encephalitis lethargica, 20; dysentery, 7; ophthalmia neonatorum, 111. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 20 counties: London, 12; Bedford, 2; Derby, 23; Durham, 49; Lancaster, 10; Middlesex, 1; Norfolk, 1; Northampton, 1; Northumberland, 19; Nottingham, 8; Salop, 1; Stafford, 9; Surrey, 2; Sussex West, 1; Warwick, 3; Yorks, North Riding, 5; West Riding, 38; Brecknock, 1; Glamorgan, 18; Monmouth, 15.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on July 3rd–4th was as follows:—Small-pox, 58 under treatment, 2 under observation; scarlet fever, 1760; diphtheria, 1909; enteric fever, 16; measles, 520; whooping-cough, 159; puerperal fever, 16 (plus 14 babies); encephalitis lethargica, 68; poliomyelitis, 1; "other diseases," 29. At St. Margaret's Hospital there were 18 babies (plus 15 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 31 (7) from measles, 5 (0) from scarlet fever, 24 (1) from whooping-cough, 29 (4) from diphtheria, 45 (10) from diarrhœa and enteritis under two years, and 31 (4) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London occurred at Newport (Mon.), and Cardiff. Of the 24 fatal cases of measles outside London, 5 were reported from Liverpool, 4 from Newcastle-on-Tyne, and 3 each from Birmingham and Middlesbrough. Of the 23 fatal cases of whooping-cough outside London 6 were reported from Birmingham and 3 from Liverpool. During the same week Glasgow reported 6 deaths from whooping-cough.

The number of stillbirths registered during the week was 333 in the great towns (corresponding to a rate of 50 per 1000 births), including 61 in London.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. A. R. Schofield to be Surg. Capt.

Surg. Lt. H. M. Devane to be Surg. Lt.-Comdr.

The following appointments are notified:—Surg. Comdrs.: E. B. Kenny to *President* for R.N. Recruiting Headquarters; G. D. Walsh to *Pembroke* for R.M. Infirmary, Chatham; A. G. Valpy French to *Pembroke* for R.N. Hospl., Chatham; and J. G. Boal to *Berwick*. Surg. Lts.: W. V. Beach to *Wallace;* A. L. McDonnell to *Vivid* for R.N. Hospl., Plymouth; M. Clifford to *Renown;* and J. M. Sloane to *Pembroke* for R.N. Hospl., Great Yarmouth. Surg. Lt.-Comdr. (D.): D. Paterson to *Egmont* for R.N. Hospl., Malta. Surg. Lt. (D.): D. Barker to *Victory* for R.M. Infirmary, Portsmouth, and to *Victory* for R.N. Barracks, Portsmouth.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt.-Comdr. W. C. Macartney to be Surg. Comdr.

ROYAL ARMY MEDICAL CORPS.

Maj. D. W. Bruce retires, receiving a gratuity.

W. A. Lethem (late Maj., R.A.M.C., Mila.) to be Maj.

Capt. D. P. H. Gardiner to be Maj.

Capt. A. U. Webster relinquishes his commn.

TERRITORIAL ARMY RESERVE.

Capt. J. C. Knox, from the Active List, to be Capt.

ROYAL AIR FORCE.

Squadron Leader R. H. Knowles to be Wing Comdr.

Flight Lt. C. A. E. I. Brownlee to be hon. Squadron Leader.

Flying Officer L. Freeman is promoted to the rank of Flight Lt.

Flight Lt. E. E. Isaac relinquishes his temporary commn. on completion of service and is permitted to retain his rank.

COLONIAL MEDICAL SERVICES.

Capt. R. Nixon, M.O., and Mr. H. H. B. Follit, M.O., Nyasaland, to be Sen. San. Offs. in the Tanganyika Territory.

Mr. H. P. S. Gillette is appointed M.O., St. Lucia, Windward Islands.

Correspondence.

"Audi alteram partem."

DIRECT REPRESENTATION ON THE GENERAL MEDICAL COUNCIL.

To the Editor of THE LANCET.

SIR,—As the university professorial and consulting element is so fully in evidence on the General Medical Council, it is fitting that the Direct Representatives of the profession should be general practitioners. With this I am absolutely in accord. At a meeting of the profession in my division (Kensington) it was resolved to put forward my name as a candidate for nomination at the coming election. I am, and have been, for the whole of my professional career a general practitioner pure and simple. I served for five years on the General Medical Council as a Direct Representative, and therefore am thoroughly conversant with its methods and procedure, so that if I were re-elected I could at once take my place in its deliberations without having to serve any apprenticeship. In the British Medical Association I have held every possible office, except that of Treasurer and Chairman of Council, having been chairman of my division, president of my branch, member of the General Council for 17 years, chairman of the Representative Body 1915–18, chairman of the Medico-Political Committee for seven years, president of a section at the general meeting in 1920, member, chairman, and vice-chairman of numerous special and "ad hoc" committees, and have also represented the Association on many outside bodies, in some cases for many years. During the whole of this time, both within the British Medical Association, and also very largely as a member of outside councils, I have done my utmost to further the honour and best interests of my profession. For these reasons I have allowed my name to go forward as a candidate, and I appeal to all members of the profession for their support. Should I be re-elected I should do my very best to carry out the duties of the post as I did when I was a member some years ago, when I never missed a single session or sitting of the Council.

I am, Sir, yours faithfully,

London, July 7th, 1928. E. B. TURNER.

To the Editor of THE LANCET.

SIR,—Owing to the lamented death of Dr. J. A. Macdonald of Taunton, and to the resignation of Sir Robert Bolam (who has been appointed representative for the University of Durham), there will be, in October, an election of two Direct Representatives on the General Medical Council by the medical practitioners of England and Wales. It is understood that meetings of the profession will shortly be called in all parts of the country to consider nominations for such representatives.

The educational side of the Council's work is well cared for by the representatives of the various universities and licensing bodies. Many of these representatives, too, are thoroughly conversant with the special problems of consultant practice, being themselves actively working in that sphere.

Only two general practitioners at the moment have seats on the General Medical Council. The penal cases, which absorb so large a proportion of the Council's time, deal often with situations arising in the lives of general practitioners, as is only natural seeing that general practitioners constitute the bulk of the profession. The preparation of the medical student for ordinary family practice demands emphasis in the regulations laid down for his education, and for this the advice of general practitioners ought to be useful.

We are advised of a strong feeling that opportunity should be taken of this by-election to place upon the General Medical Council two Direct Representatives who have the closest possible touch with the problems

and difficulties of the general medical practitioner. Having been approached on the matter, we venture to solicit the support of the profession as two general practitioners representing industrial and rural areas respectively. We are both in the active pursuit of our profession, and have had a good deal of experience of administrative and medico-political work, which we hope would be of value if the profession should see fit to endorse our candidature. One of us (J. W. Bone) has had 32 years in general practice, private and contract, in the industrial area of Luton, has served on the Insurance Acts Committee for five years, and at the present time has the honour to be a member of the Council of the British Medical Association and chairman of its Medico-Political Committee. The other (E. K. Le Fleming) is familiar with other aspects of private and contract practice through 27 years' work in the rural area of Wimborne; whilst in addition to serving on the Council of the British Medical Association and the Insurance Acts Committee he has been honoured by the confidence of the insurance practitioners for the past five years as chairman of the Conference of Local Medical and Panel Committees of the United Kingdom.

Our experience in interpreting the collective views of our fellow practitioners and our willingness to devote whatever time and energy may be necessary to the proper fulfilment of the duties of a Direct Representative embolden us to solicit the support of the profession generally.

We are, Sirs, yours faithfully,

JOHN W. BONE.
E. K. LE FLEMING.

July 7th, 1928.

NASO-PHARYNGEAL INFECTIONS AND EPIDEMIC JAUNDICE.

To the Editor of THE LANCET.

SIR,—In your issue of June 30th you publish a report of a discussion on naso-pharyngeal epidemics in public schools and an interesting leading article on epidemic jaundice in Great Britain. I have already in communications to the medical journals expressed my views as to the ætiology of the common cold, pointing out that the bacteriological aspect of these conditions does not cover the whole question; in fact, that bacteria may not be the primary agent at all, but that there is an underlying biochemical aspect which may be more essential. Organisms which were formerly harmless saprophytes may become pathogenic and infective, as a result of the disturbed biochemistry of the intestine, liver, and blood stream. Routine examination of the urine of people in ill-health has shown me the frequent occurrence, about and prior to a catarrhal season, of cases showing evidence of disturbed intestinal hepatic function, as indicated by the presence of indican, bile oxalates, and other bodies in the urine. The finding of similar evidence in many patients with catarrhal colds (probably these might be regarded as carriers) led me to think that the metabolic disturbance was the underlying cause of the activation of the organisms in the nose and throat. It is difficult to be dogmatic on this point, since one is not called to see these patients until the catarrhal attack develops; but I have had suggestive cases. One in particular who came to me in the height of summer because he was out of sorts. Examination did not reveal much wrong objectively, except that the urine contained bile. Treatment directed to this condition—ammonium chloride with alkalies—resulted on the third or fourth day after in his developing an acute fulminating catarrhal cold.

Recent American writers have been leaning to this metabolic aspect of the common cold and have claimed that it is due to a mild acidosis; and that they could precipitate an attack by the administration of calcium chloride or ammonium chloride. One cannot subscribe to this view entirely, since many patients take these drugs without evincing any signs of a cold; but their exhibition, when there is an underlying hepatic disturbance, may precipitate an attack.

There is probably some disturbance of the blood calcium as well in patients who get colds. Dr. J. A. Glover evidently had this metabolic aspect of the question in view when he recommended the inclusion in the diet of oranges, vegetables, salads, and watercress. The border-line between these cases of colds with disturbed hepatic function and those of epidemic catarrhal jaundice seems to me slight. I do not refer to those cases of jaundice definitely due to the *Leptospira icterohæmorrhagiæ*. I agree with Buchanan and Ross, quoted in your leading article, when they propose a bacteriological examination of the naso-pharynx and intestine in cases of epidemic jaundice. I would go further and suggest that not only bacteriological but biochemical investigation is required. In epidemics of catarrhal colds, or influenza, I have often wondered to what extent the jaundice associated with some of those cases was primarily due to the catarrhal organisms, or to a previous hepatic disturbance caused by some bowel organism—e.g., *B. coli*, which has become pathogenic. It is not easy to explain the fact that organisms in the nose and throat seem only sometimes to become pathogenic. My reading of it is that the soil has been prepared for them by metabolic and biochemical disturbances through atmospheric conditions, improper diet, overcrowding, insufficient fresh air and exercise, so that it is easy for activated organisms to find suitable soil when propagated by droplet infection. This droplet infection does not explain the numerous cases of colds which seem to spring up perhaps on the same day, at the very start of a catarrhal season, often in scattered parts of the town and country, and in people who have not been exposed to infection, but suggests auto-activation. The special frequency of post-operative pneumonia in cases of gall-bladder disease, gastric and duodenal ulcers, where the toxæmia factor is always more or less in evidence, is an allied problem which demands investigation.

I am, Sir, yours faithfully,

R. CHALMERS, M.D., F.R.C.S.E.

Darlington, June 30th, 1928.

"MANSON HOUSE."

To the Editor of THE LANCET.

SIR,—In the report in your issue of June 30th on the twenty-first anniversary dinner of this society Dr. Andrew Balfour is quoted as saying that "over £3000 had been raised towards the provision of a manson house for the Society." The verbatim report before me reads, "I should like to speak of the Manson Fund to provide what is going to be called possibly 'Manson House.' I say possibly because there is a distinguished member of our Council who has so little faith in the sobriety of his fellow Fellows that he feels that 'Manson House' might be mistaken for the building near the Bank or some celestial habitation, and he has proposed that it should be called 'Patrick Manson House' to prevent any such difficulty. I hope it will be called 'Patrick Manson House.'" Comment is not required.

I am, Sir, yours faithfully,

CLAYTON LANE,
Joint. Hon. Secretary, Royal Society of Tropical Medicine and Hygiene.

11, Chandos-street, Cavendish-square, London, W.,
July 4th, 1928.

LIVER TREATMENT IN PERNICIOUS ANÆMIA.

To the Editor of THE LANCET.

SIR,—Dr. J. H. Anderson in your issue of March 31st (p. 674) wishes to know if Orientals have long been using powdered liver for pernicious anæmia. It may interest him to learn that desiccated flesh of a carnivorous crow has for ages been used by the Indian *vaid* (herbalist) for a condition allied to

pernicious anæmia. Unfortunately, the nomenclature of diseases in the Unani system of medicine is rather defective, so that it is possible all the cases of anæmia thus treated may not have been of pernicious variety. Nevertheless, the fact that desiccated flesh including liver of a carnivorous crow has been highly recommended in the Unani system of medicine for anæmia makes it amply clear that the salutary effects of this treatment were well known to Orientals. To make further sure about this I referred to the book of therapeutics in the possession of a local Baluch *vaid* and found that there was in it first a description with signs of identification of this crow which is termed "Zagchah." Then the author proceeded to describe in detail its therapeutic qualities and recommended its desiccated flesh for regeneration of pure blood (*khalis khun*) in the system.

I may also state that I have seen *vaids* using similar things, but the Western science which has put therapeutics on a sound basis of reason does not permit even in thought the use of such drugs in that crude form. I am tempted to mention the following case by way of amplification. One patient had an attack of renal colic and the *vaid*, who was called in, had a goat slaughtered of which he removed the kidneys and made the patient swallow the same immediately, while they were still dribbling with blood. The patient not only obtained prompt relief but has not had an attack thereafter during the last eight years.

I am, Sir, yours faithfully,

P. V. KARAMCHANDANI, M.B., I.M.S.,
In charge Indian Military Hospital, Pishin,
June 11th, 1928. Baluchistan (India).

PERICARDIAL KNOCK.

To the Editor of THE LANCET.

SIR,—The communications on this subject from Dr. W. A. Lister and Dr. H. E. Symes-Thompson recall to my mind a case apparently unconnected with intrathoracic disease or injury. Some eight months ago a panel patient employed as manservant in London came to the south coast to convalesce from "neurasthenia." At the first consultation he gave a history of "shell-shock," and while recounting his then troubles he burst out crying. Five days later he called to apologise for having "made a fool of himself." He entered the consulting room in a very agitated state and said, "Do you hear my heart knocking, sir?" I was sitting at a distance of about five feet and the knock was distinctly audible for fully 20 seconds, and then stopped quite suddenly when the patient seemed more composed. Neither at that time nor at any later date have I found any physical abnormality. Two months later his mental condition having improved the patient found employment as a postman.

I wish now that I had used the stethoscope while the sound was audible, but at the time I was more amused than scientific. In this case, whose only abnormality was extreme nervousness accentuated by a desire to apologise for supposed lack of manliness, why should the left pulmonary artery be obstructed?—the cause suggested by Dr. Lister.

I am, Sir, yours faithfully,

Bexhill-on-Sea, July 9th, 1928. JOHN KERR.

To the Editor of THE LANCET.

SIR,—Dr. Symes-Thompson suggests that the peculiarly loud heart sounds in his case of empyema arose in the pulmonary artery, and are due to either tension or distortion of that artery. He also compares them to the sounds produced when estimating the blood pressure auscultatively. May I point out that there is no evidence whatever (1) that the artery was under increased tension or distorted; (2) that an artery distorted or under increased tension can produce a sound. He admits that as soon as the fluid was liberated from the chest the heart sounds disappeared; such an admission seems to prove that the fluid had a good deal to do with the production of the sounds. Such a fluid is easily moved by the moving heart, and moving fluid is particularly prone, especially when confined, to give rise to a sound.

My theory regarding the heart sounds is that they are due to the movements of the pericardial fluid which take place normally under a negative pressure of 6 to 8 cm. of water. If Dr. Symes-Thompson will half fill a rubber foot-warmer and shake it slowly from end to end he will hear noises resembling those due to his empyemic fluid. The comparison to the sounds heard when estimating blood pressure assumes that these sounds are produced by the vibrations in that artery, but a reference to my letter on the subject in your issue of May 12th last may tend to show that such an assumption is incorrect.

I am, Sir, yours faithfully,

Swansea, July 10th, 1928. G. ARBOUR STEPHENS.

BRITISH EMPIRE CANCER CAMPAIGN.

To the Editor of THE LANCET.

SIR,—I see that I am still stated to be Chairman of the Management Committee of the *Cancer Review* in the July number just published, and in the annual report of the British Empire Cancer Campaign. This is no longer the case as I resigned more than a month ago from this and the other Committees of the British Empire Cancer Campaign on which I had been serving. I shall therefore be obliged if any communications meant for me be addressed to 8, Queen-square, W.C.1.

I am, Sir, yours faithfully,

J. A. MURRAY,
Director, Imperial Cancer Research Fund.
London, July 6th, 1928.

AN OBNOXIOUS PRACTICE.

To the Editor of THE LANCET.

SIR,—It is right, I think, that attention should be called publicly to an obnoxious practice which is being rapidly extended in certain parts of London. I speak from facts within my own knowledge and with a complete sense of responsibility. I enclose my card for your information, but I do not sign my name, for some reasons that may be obvious, and for at least one that may not be obvious—namely, that I have no desire to appear more righteous than any of my neighbours. Still, I shall have no hesitation in giving my name if called upon, inasmuch as at present I feel intensely insulted at having been made repeatedly a party to a vulgar and dishonest trick. The insult is to my intelligence. I feel that I have been chosen as a dupe rather than as an accomplice. This is the sort of thing that happens. A physician is summoned in consultation, usually by telephone, on behalf of a practitioner whom he may or may not know. The message is to the effect that a fee of (say) £5 5*s.* will be paid to the physician. Or he is told that only £5 5*s.* can be paid, and he is asked to accept this. The consultation takes place, after which the practitioner leaves the room saying that he will see about the fee. He returns with the relatives for the usual interview and subsequently, perhaps outside the house, hands the consultant £5 5*s.*; but £2 2*s.* has been kept for himself, while the relatives believed that the consultant's fee was £7 7*s.* Sometimes the practitioner produces his own cheque at the consultation, for the agreed £5 5*s.*, receiving the £7 7*s.* from the family. There are several variants of the trick, all equally dishonourable, but not all equally clever, and two sources of weakness are obvious. One is that the relatives may insist on paying the consultant the full £7 7*s.*; the other is that the same consultant may be called in twice, the second time at the patient's own request, and with an honourable and straightforward practitioner in attendance. Discussion about the fee may lead to a reference to the previous fee, when the deception may be exposed. This has happened in my

own experience. I have written from the standpoint of my own experience, but have reason to believe that surgeons are victimized at least as frequently as are physicians! Obviously the practice is one that can hardly be suppressed by individual action. An analogous situation occurs sometimes, when the employers, the friends or the relatives of a panel patient ask the panel doctor to meet a specialist in consultation. The panel doctor does not desire to absent himself from the consultant's visit, but may spend time without hope of fee. He sometimes asks the consultant—who is paid by the employers—to "do something for" him in the matter. I have, in such a case, suggested that a fee should be paid directly in a complimentary way by the employers. But I was once asked by the panel doctor to add £2 2s. to my "account" for his sake!

I may perhaps say, in conclusion, that in my view the General Medical Council might well make a pronouncement to the effect that payments should always be made directly to the consultant and not through any intermediary, or that the amount of the fee should be stated by the consultant to the person responsible for the fee. It seems to me, however, that panel practitioners have a real grievance in not receiving the proper fee for being present at a consultation desired by the employers. This does not excuse an underhand method of obtaining a fee, though the existence of this real grievance has thus become apparent to me.

Let us hope that the publicity given to my experiences, which I know are shared by certain of my colleagues, will put an end to such practices.

I am, Sir, yours faithfully,

June 23rd, 1928. NEMO.

*** This letter reveals the existence of what is rightly styled an obnoxious practice. It is one that should receive immediate attention. Whether the General Medical Council would consider it any part of its duties or responsibilities to issue such a pronouncement as is sought, even in the form of a warning note, seems doubtful. The disciplinary powers of the Council would have to be set in action against those who disobeyed the pronouncement, or the Council would be stultified, and those powers can only be exercised if unimpeachable evidence were forthcoming. Publicity anyhow must act as a deterrent, opening the eyes of the public to a trick by which both they and a section of the medical profession may be victimised, although we hope that Nemo's experience is not a common one. If it is a fact that no provision can be made for the payment of panel doctors attending a consultation, the position should be altered.—ED. L.

"THE GREAT PROBLEM AND THE EVIDENCE FOR ITS SOLUTION."

To the Editor of THE LANCET.

SIR,—I was sorry to see in the honoured columns of THE LANCET a review which treated with contempt the recent book of Dr. Lindsay Johnson, "The Great Problem," in which he discusses spiritualism. Lindsay Johnson is a very highly qualified man and his views are shared by the vast majority of those who have actually investigated the subject. The opinion of those who have not is worth less. A century ago the medical profession stultified itself by its ridicule of mesmerism which it now uses as a powerful ally. It is sad to see it placing itself in the same false position towards spiritualism, for history will most certainly repeat itself.

As to the quality of the advertisements in psychic papers I agree with the reviewer that they might be improved, but is it reasonable to judge a vast subject not by the writings of a Lodge, a Crookes, a Wallace, a Richet, or a Flammarion, but by the advertisements in a few small papers?

I am, Sir, yours faithfully,

ARTHUR CONAN DOYLE, M.D. Edin.

Buckingham Palace Mansions, S.W.,
July 9th, 1928.

"IN AN INTERVIEW."

To the Editor of THE LANCET.

SIR,—Extracts from a paper by me on tuberculosis have been published by a newspaper and I should explain that no information of any sort was given by me, and that the extracts are based upon an advance copy of the *British Journal of Tuberculosis* obtained from the publishers. The account of the boxer was, I understand, obtained by the paper in the usual routine of news collecting; it certainly did not emanate from me. My real object in writing is to draw attention to the fact that another newspaper stated that I said "in an interview" that the treatment was still on its trial, or words to that effect. The "interview" actually consisted of asking me over the 'phone for an interview, and my reply that I could not possibly grant it, and that everything I had to say I had said in the *British Journal of Tuberculosis*.

I am, Sir, yours faithfully,

Manchester, July 10th, 1928. C. E. JENKINS.

THE TALE OF MEDICAL RESEARCH.

AN annotation published in our issue of June 30th under this heading has brought a communication from Mr. S. C. Turner, the Chairman of the Antivivisection (Battersea General) Hospital, protesting that statements made at the annual meeting of the Research Defence Society were misleading. Mr. Turner refers chiefly to the public announcement of Mr. Peart who, he says, remained surgeon to the hospital for four years after the situation was clear, while he had ceased to be honorary surgeon for two years when he made his announcement. Our words contained nothing to the contrary, and it is difficult to say why Mr. Peart should not be allowed to choose his own date for publicity, or to see in what way his period of silence has damaged the hospital.

UNIVERSITY OF ST. ANDREWS.—The Macewen prize in surgery has been awarded to Mr. Thomas Lawson McEwan, who is a graduate in medicine and in science of the University.

HOSPITALS AND THE MIDDLE CLASSES.—It is understood that the Pay Bed Committee of King Edward's Hospital Fund for London, appointed last year, will shortly issue its report on hospital accommodation for the professional and middle classes. The committee suffered a serious loss in the death of its chairman, Lord Hambleden, who, owing to his last illness, was unable to attend the deliberative meetings, though he had presided at the meetings when evidence was taken. The committee has devoted special attention to the question of voluntary insurance schemes.

BRITISH HUMANE ASSOCIATION'S LONDON CLINIC.—The officers of this clinic in Ranelagh-road, S.W., entertained several hundred medical visitors at a demonstration of therapeutic methods on the evening of July 10th. The institution was opened early this year by the British Humane Association; it succeeded the clinic in Tufton-street, and is one of the largest physiotherapeutic establishments in the world, its capacity being over a thousand patients a day. The ground floor houses offices and the saline and aromatic inhalation rooms, where patients with bronchial and pulmonary affections may breathe medicated air. On the first floor are the electrical and diathermy wards and a large tungsten-arc room. Almost the whole of the second floor is occupied by the mercury-vapour ward, and the whole clinic is elaborately equipped. The visitors saw the apparatus at work, and at a meeting over which Sir Bruce Bruce-Porter presided they listened to papers by Dr. Howard Humphris, who spoke on heliotherapy in general, by Dr. R. Deck, who gave an account of some unusual cases in tungsten-arc practice, and by Dr. Courtenay Mason, who explained the technique of inhalation treatment. The situation of the clinic is excellent, for it has a large poor population at its doors, and is accessible to south as well as to north London. Patients pay what they can afford, and it is stated that half of them make no payment. The clinic is maintained, as it was founded and equipped, at the expense of Mr. Campbell Johnston.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

REORGANISATION OF OFFICES (SCOTLAND) BILL.

ON Monday, July 9th, the Reorganisation of Offices (Scotland) Bill was considered in the House of Commons on Report and read the third time by 175 votes to 78. This is a measure which provides that the powers and duties of the Scottish Board of Health, the Board of Agriculture for Scotland, and the Prison Commissioners for Scotland shall cease to exist from the appointed day, and that their powers and duties shall be transferred to a Department of Health for Scotland, a Department of Agriculture for Scotland, and a Prisons Department for Scotland.

HOUSE OF LORDS.

MONDAY JULY 9TH.

Child Destruction Bill.

The Child Destruction Bill (formerly the Infanticide Bill) was considered in committee.

Lord DARLING formally moved that the amendments which had been made by the Select Committee to which the Bill had been referred should be agreed to. This was done, and the Bill passed through Committee.

Reading University Bill.

The Representation of the People (Reading University) Bill, a measure which gives the franchise to graduates of Reading University on the same lines as other universities, passed through Committee.

HOUSE OF COMMONS.

WEDNESDAY, JULY 4TH.

Rating of Hospitals.

Sir COOPER RAWSON asked the Minister of Health whether he had received any representations from local authorities or charitable organisations with regard to the effect of the operation of the Rating and Valuation Act of 1925 on hospitals and similar institutions; and whether he proposed to take any action in consequence.—Sir KINGSLEY WOOD replied: My right hon. friend has received communications on this subject from the British Hospitals Association and from the authorities of certain hospitals but not from local authorities. I can only refer to the reply which I gave on July 2nd.

Sir C. RAWSON asked if Sir Kingsley Wood was aware that the Sussex County Council had had their assessment raised from £100 to £1600, and if the assessment committees of the different localities were justified in making nominal assessments as they had done hitherto? If not, would the House have any opportunity of discussing the matter at an early date, as it affected so many hospitals all over the country?

Sir KINGSLEY WOOD said that if assessment committees were not acting properly and within the law there was a remedy by way of appeal.

Death of Two Factory Girls at Battersea.

Mr. WILLIAM THORNE asked the Home Secretary whether his attention had been called to the report of the Battersea coroner on the resumed inquest on two girls who died in hospital following illness they had contracted while employed at a scouring-powder works at Battersea; that the medical evidence showed that the cause of death was industrial silicosis and not tuberculosis, as at first diagnosed; that three girls and a boy employed at the same works had died since Jan. 25th, 1927; and if he would take any action in the matter in consequence of the dangerous nature of the work in handling the powder.—Sir W. JOYNSON-HICKS replied: Yes, Sir. A full report has been submitted to me by the Medical Inspector of Factories, who attended the inquest and investigated the circumstances. In the opinion of the medical inspectors these cases originated when the mixing and filling of the powder were done by hand. At the beginning of 1927, on the instructions of the district inspector of factories, mechanical methods of working were introduced. The plant since that date has been totally enclosed, and exhaust ventilation applied to all points where dust is liable to escape. I am advised that the present arrangements should prove effective, but they will continue to receive close attention.

Organised Draws for Hospital Funds.

Sir COOPER RAWSON asked the Home Secretary why a voluntarily organised draw on behalf of the funds of a Hove hospital was stopped by the Home Office while draws conducted on identical lines for other hospitals in Brighton and Hove had not been interfered with; and if an authoritative statement could be made for the guidance of those who organised these and similar functions on behalf of charities.—Sir W. JOYNSON-HICKS replied: The enforcement of the law relating to illegal lotteries is a matter for the local police and not for the Home Office. My attention was drawn to a public lottery at Hove in apparent contravention of the law, and I brought it to the notice of the local police. Had my attention been drawn to the other lotteries referred to, it would have been my duty to bring them also to the notice of the police. As I stated in reply to my hon. and gallant friend, the Member for Dulwich, on July 14th, public lotteries are definitely illegal, and the law does not discriminate between those promoted in aid of charity and other public lotteries. I have no authority to decide what is or is not a public lottery, but it is always open to the promoters of charities to consult the local police on the question whether any proposed lottery appears to contravene the law.

Sir C. RAWSON asked whether, as this particular question would deprive the hospitals in the constituency of Brighton and Hove of some £15,000 a year, the Home Secretary would persuade the Government to introduce legislation to remove some of the anomalies and stupidities of the existing law in regard to gaming.

Sir W. JOYNSON-HICKS said that he had already issued two memoranda on the subject of gaming. The law as regarded lotteries, however, was definite, and did not permit of any action by his department.

Sir C. RAWSON: Will the right hon. gentleman suggest an alteration of the law?

No reply was given to the question.

THURSDAY, JULY 5TH.

Provision for Mentally and Physically Defective Children.

Mr. HARRIS asked the President of the Board of Education how many local education authorities had provided no accommodation up to the present for mentally defective and physically defective children; and were there any authorities without accommodation who were making provision during the current educational triennium.—The Duchess of ATHOLL (Parliamentary Secretary to the Board of Education) replied: According to the information in the possession of my department, there are 240 local education authorities who have provided no special schools of their own for mentally defective children, and 257 who have provided no special schools of their own for physically defective children; but 131 of the former authorities and 221 of the latter send children of these types to special schools provided by other authorities or by voluntary managers, and some 200 authorities make provision for the orthopædic treatment of crippled children. In addition, about 50 authorities have arranged for the supervision of mentally defective children in their areas. As to the second part of the question, the Board already have before them proposals for the provision of five new schools for mentally defective children, and 28 new schools for physically defective children.

Insurance Patients and Vitamin Preparations.

Miss WILKINSON asked the Minister of Health whether he was aware that certain insurance committees had decided that insurance practitioners must not order for their patients vitamin preparations on the ground that they were not drugs but food, while other committees allowed doctors to prescribe vitamin preparations; and whether he could ensure that insurance patients were not deprived of such necessary products recognised by modern medical practice.—Mr. CHAMBERLAIN replied: The question whether any particular preparation can be regarded as a medicine within the meaning of the National Health Insurance Acts is one to be determined by the local insurance committee, and would only come before me formally on an appeal from their decision. I am, however, aware that there is a divergence of practice between committees on the point, and I am proposing to issue a statement for the purpose of assisting insurance practitioners and committees in their consideration of it in future.

Poor-law Medical Officers and Extra Remuneration.

Captain FAIRFAX asked the Minister of Health if he had received an appeal from the Norfolk vagrancy committee for assistance in providing extra remuneration for medical officers of poor-law institutions now called upon, by order of the Ministry, to examine all casuals for small-pox; and, in view of the fact that this work was outside the duties ordinarily performed by these doctors, whether he would undertake to defray all or part of the additional fees involved.—Mr. CHAMBERLAIN replied: The answer to the first part of my hon. and gallant friend's question is in the affirmative, and to the second part in the negative. There are no funds at my disposal out of which such a contribution as is suggested could be paid.

Lead Poisoning Among Painters.

Lord HENRY CAVENDISH-BENTINCK asked the Home Secretary the number of cases of lead poisoning among painters for January, February, March, April and May, 1927, and for the same months of 1928; and what steps were taken to see that the regulations under the Lead Paints Act were being enforced.—Sir W. JOYNSON-HICKS replied: The number of cases reported for the first five months of 1927 was 33, and for the same period in 1928, 40. All cases of lead poisoning and complaints are fully investigated by the factory inspectors. It has always been recognised that on account of the special conditions under which the industry is carried on it would be necessary to rely to a large extent on the coöperation of the industry itself for securing general compliance with the regulations. With this object conferences were arranged with the employers' and operatives' associations, and I am glad to state that both sides have taken steps to impress on their members the importance of a strict observance of the regulations, and have promised to assist the department in every possible way.

Grants in Aid of Health Services.

Sir NICHOLAS GRATTAN-DOYLE asked the Secretary to the Treasury whether he would state for the latest available year the amounts of the following grants to local authorities in England and Wales: percentage grants in aid of the following health services; tuberculosis, maternity, and child welfare; welfare of the blind; venereal disease; and mental deficiency.—Mr. CHAMBERLAIN replied: The following are the percentage grants in respect of the undermentioned health services:—

	£
Tuberculosis	1,640,098
Maternity and child welfare	767,082
Welfare of the blind	3,195
Venereal disease	302,158
Mental deficiency	505,642
	£3,218,175

The foregoing figures do not include the undermentioned amounts granted to voluntary associations:—

	£
Maternity and child welfare	197,119
Welfare of the blind	112,082
Venereal disease	152
Mental deficiency	8,422
	£317,775

Maternal Mortality Figures.

Mr. GROVES asked the Minister of Health the maternal mortality figures for England and Wales for 1924 to 1927, and for the county borough of West Ham for the same periods.—Mr. CHAMBERLAIN replied: The following table shows the numbers of deaths classified as due to childbirth, and rates per 1000 live births, for England and Wales and for West Ham county borough, for the years 1924–27:—

Deaths due to childbirth—

	England and Wales.		West Ham county borough.	
Year.	No.	Per 1000 live births.	No.	Per 1000 live births.
1924 ..	2847	3·90	12	1·66
1925 ..	2900	4·08	20	2·85
1926 ..	2860	4·12	13	1·94
1927* ..	2690	4·11	18	3·00

* Provisional figures.

Anthrax in Human Beings and in Foreign Imported Skins.

Dr. SALTER asked the Home Secretary the number of cases of anthrax which had occurred in human beings and had been notified to his department during each of the last five years; the number of cases in which the disease proved fatal in each of those years; and the number of cases in which the infection was traced to its source or origin.—Sir W. JOYNSON-HICKS replied: The numbers in the years 1923 to 1927 were 50, 45, 48, 42, and 35 respectively, of which 8, 4, 10, 4, and 3 were fatal. In all except 7 of the cases the patient was found to have been in contact with materials likely to be infected with anthrax.

Dr. SALTER asked the Home Secretary whether his department had investigated the serious outbreaks of anthrax at Newcastle, Warrington, and Bolton which had occurred this year; if so, what were the results of the inquiry; whether he had considered amending the regulations dealing with the treatment of hides and skins; whether he proposed to enforce arrangements for the efficient disinfection of foreign imported skins; and whether he intended to issue a welfare order in connexion with tanning and the leather industry generally.—Sir WILLIAM JOYNSON-HICKS replied: Yes, Sir. Each of the cases—eight altogether—reported this year from the three places mentioned has been investigated. It was found that in every case except one the workman had been in contact with hides imported from China. The question of further precautions has for some time past been under discussion with the employers' and workers' associations, but it is agreed that the only measure likely to be effective would be disinfection. Investigations for this purpose were commenced some time ago by the United Tanners Federation, and are being actively pursued, but I regret that no satisfactory method has yet been worked out. The issue of a draft welfare order is also under consideration, and I hope that a decision will be reached very shortly.

MONDAY, JULY 9TH.

Report of Committee on Mental Deficiency.

Mr. HARRIS asked the President of the Board of Education when the Report of the Special Committee set up in 1923 to investigate various problems relating to mental deficiency will be ready; and whether it was proposed to issue the Report as a public document.—The Duchess of ATHOLL replied: My right hon. friend hopes that the Report will be available before the end of the year and that it will be published, but he cannot, of course, give an undertaking at this stage.

The Pace Case and Coroners' Powers.

Mr. PURCELL asked the Prime Minister whether he would consider the matter of making adequate compensation to Mrs. Pace, who had been under police surveillance since Jan. 10th last, had been subjected to severe examination by Scotland Yard officers and a protracted coroner's inquiry, arrested on a charge of murder, kept in prison for a lengthy period, and compelled to undergo all the anguish and terrors on the capital charge, and who had now been released, no case having been proved against her; further, if the right hon. gentleman would institute a public inquiry into the position and powers of coroners, and whether, in the public interest, in view of the heavy expense involved in ensuring adequate legal defence, provision could not be made to guarantee to poor persons, particularly those implicated in charges involving life and death, the fullest and best legal and technical defence free from all cost.—Sir THOMAS INSKIP (Attorney-General) replied: This question raises three very important matters—firstly, the question of compensation to Mrs. Pace; secondly, the proposal to hold a public inquiry into the position of coroners; and, thirdly, a proposal to provide legal assistance for accused persons. In regard to the two last questions I am not now prepared to give any answer, except that these matters will receive due consideration by the proper authorities. With regard to the question of compensation to Mrs. Pace, she has been acquitted by a jury after a very careful and admittedly fair trial. There has been no departure from the ordinary course of the administration of justice. In these circumstances it must be undesirable, in the interests of justice generally, that any proposal for compensation in this case should be entertained.

Mr. MORRIS asked if the Attorney-General proposed to introduce an amendment of the law relating to coroners' juries, and limiting the power of such juries to inquiry into the cause of death only, leaving the verdict to be inquired into by the magisterial courts and the Assize Court.

Mr. MACPHERSON asked if the Attorney-General meant that the Government proposed to institute an inquiry into the question of the coroners' inquisition. If so, would he bear in mind that, in Scotland, there were no coroners and no coroners' inquisitions, and that the progress of justice was always safe and efficient

Sir T. INSKIP: I did not say that the Government are contemplating an inquiry into the question of coroners' inquisitions. What I said was, that the question which has been submitted, at very short notice, will receive due consideration from the proper authorities, and everything would be borne in mind.

Mr. MORRIS said that quite apart from the facts of this particular case, there were two verdicts on record: that of the coroner's jury, finding the person guilty of murder, and the verdict reversing that at the Assize Court. That revealed an illogical state of the law. Was it not desirable, therefore, to amend the law, so as to limit the findings of the coroner's jury to the cause of death alone?

Sir T. INSKIP: Whether that is desirable or not, it is not a proper subject of question and answer, without due opportunity for considering these important matters.

TUESDAY, JULY 10TH.

Hospitals and Motor Accidents.

Mr. HORE-BELISHA asked the Minister of Transport whether, in view of the heavy and increasing burden imposed upon voluntary hospitals in the treatment and maintenance

of motor accident cases, he would consider introducing a Bill rendering insurance compulsory upon all motor drivers and the cost of treatment and maintenance of motor accident cases admitted to voluntary hospitals being made a first charge upon the insurance money.

Sir JOHN MARRIOTT asked the Minister of Transport whether his attention had been drawn to the increasing burden imposed upon voluntary hospitals for the treatment of cases arising from motor accidents; and whether he would introduce legislation to make the insurance of all drivers of motor-cars compulsory and to make the cost of the treatment of motor accident cases a first charge upon the insurance payment.—Colonel W. ASHLEY replied: I have received a copy of the resolution to which the hon. Member refers. The compulsory insurance of all motor vehicles would involve great difficulties, but even if they could be overcome I do not think that it would be practicable to make the cost of treatment and maintenance in voluntary hospitals a first charge on the insurance monies. In order to bring the matter within the scope of a policy of insurance, it would be necessary, in the first place, that the hospital should have an enforceable claim against the patient, and in the second that the patient's injury, if he was a third party, should have been due to negligence on the part of the driver of the vehicle.

Disinfection of Casuals' Clothing.

Mr. SHEPHERD asked the Minister of Health whether, in view of the fact that the method most commonly used for the disinfection of the clothing of casuals rapidly destroyed the material, he would issue regulations to boards of guardians whereby disinfection would not destroy such clothing.—Sir KINGSLEY WOOD replied: My right hon. friend is advised that articles of clothing can be repeatedly disinfected without being damaged, though after a time the process may tend to deteriorate the clothing. He is afraid no regulations which he can issue will alter the position in this regard.

Medical News.

UNIVERSITY OF LIVERPOOL.—At recent examinations the following candidates were successful:—

M.D.

C. B. Bamford, C. A. Birch, J. D. Craig, M. M. Datnow, R. Y. Dawbarn, S. B. Hall, and Nellie Wall-Mesham.

CH.M.

P. R. Hawe and P. Malpas.

M.B. AND CH.B. WITH HONOURS.

Class I.—T. B. Davie,[1 2 3] J. H. Follows,[1 3] and E. W. Jones.[1 2]
Class II.—E. T. Bates,[4] T. L. Dowell,[1] and M. Silverstone.[5]

FINAL EXAMINATION FOR M.B. AND CH.B.

Part III. (*Old Regulations*).—S. W. Adler, S. Canter, Gladys A. Coventry, Ariel R. S. Deacon, H. R. Dugdale, Ruth M. Fennell, Agnes G. Gillespie, R. G. Gornall, J. J. Graham, G. T. Harris, K. Jilani, Mary G. Jones, W. E. J. Jones, T. Lasker, N. R. Lawrie, H. Leiper, J. R. Mitchell, T. C. Newman, Winifred O'Callaghan, J. Pasvolsky, H. Paterson, H. W. Smith, G. G. Warburton, and A. L. Williams.

[1] Distinction in Medicine. [2] Distinction in Surgery. [3] Distinction in Obstetrics and Gynæcology.

M.B. AND CH.B.

Part A (*New Regulations*).—A. H. Barzilay, M. J. Bennett-Jones,[7] L. Findlay,[4 5 6 7] A. T. Halton, J. C. Hill, T. N. A. Jeffcoate,[5 7] D. A. Jones, J. Libman,[4 5 6 7] G. A. C. Lynch, J. A. Martinez,[7] H. J. Partington,[4 7] C. L. Pratt, C. K. Sconce, E. B. Whittingham, and J. P. Woodward.[7]
Part I. (*Old Regulations*).—A. L. Beresford and F. J. H. Crawford.
Part II. (*Old Regulations*).—J. D. Bright-Richards and Florence M. E. Davies.

[4] Distinction in Special Pathology. [5] Distinction in Forensic Medicine. [6] Distinction in Public Health. [7] Distinction in Pharmacology and General Therapeutics.

D.P.H.

W. T. Donovan, S. C. Gawne, Thirza Redman, Mary H. Wild, and Grace H. Wood.

D.T.M.

J. D. Bilimoria, W. L. Blakemore, K. V. R. Choudari, K. K. Dhar, W. E. Holmes, W. S. Maclay, A. H. Morley, I. Sanderson, and S. Sivalingam.

UNIVERSITY OF MANCHESTER.—At recent examinations the following candidates were successful:—

FINAL EXAMINATION FOR M.B. AND CH.B.

G. L. Brown,* Doris Bernard, E. H. Brooks, Mary G. Davies, Ralph Edmundson, Alexandra W. Groves, G. B. Hardman, Simon Kelly, Morris Levine, J. A. Longworth, Stanley Nowell, S. L. Rowley, R. F. Sheppard, Henry Tickle, and J. F. Wilkinson.

* With second-class honours and distinction in obstetrics.

The following have satisfied the examiners in the undermentioned subjects:—

Forensic Medicine.—J. S. Miller.
Medicine.—I. M. Hughes.
Hygiene, &c.—R. T. Wimmer.
Obstetrics and Surgery.—Leslie Bold, Alice M. Butterworth, M. A. Chamberlain, J. H. Pattyson, Evelyn I. M. Sheppard, Raymond Whitehead, and Frederick Wraith.
Forensic Medicine, Hygiene, &c. (new regulations).—Alexander Allan, H. S. Bagshaw, F. H. Bentley, Hedley Boardman, Edith M. Booth, B. R. Bramwell, R. O. Brooks, J. A. K. Brown, Bessie H. E. Cadness, T. H. Chadwick, D. L. Cran, W. W. Fox, J. N. Greenwood, W. H. Harris, R. W. Luxton, F. N. Marshall, A. B. Moffatt, W. H. Newton, H. J. O'Loughlin, G. E. Plowright, B. P. Robinson, Donal Sheehan, C. F. Stott, Nellie Wilson, and L. C. Wright.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

Richard Handley, J. E. Howie, W. H. Shepley, and Harry Stafford.
Part I.—Nicolas Gebbie.

DIPLOMA IN BACTERIOLOGY.

A. W. Laing.

DIPLOMA IN PUBLIC HEALTH.

Part I.—Andrew Anderson, Frank Appleton, Helen G. M. Bennett, Arnold Brown, J. J. O'Reilly, Jean M. Orkney, Mary I. Prentice, Kathleen Sheehan, and P. H. J. Turton.

FINAL EXAMINATION FOR B.D.S.

S. R. Medd and F. W. Williams.

FINAL EXAMINATION FOR DIPLOMA IN DENTISTRY.

Mary M. Brandwood, Bernard Cooke, D. L. Parkes, J. N. Peacock, L. D. Smith, W. G. Taylor, and G. B. Warburton.

UNIVERSITY OF ABERDEEN.—At a graduation ceremony held on July 3rd the following degrees were conferred:—

Hon. LL.D.—John Alexander MacWilliam, F.R.S., Emeritus Professor of Physiology in the University.
M.D.—Wilfrid Marshall,* Mathilda F. Menzies,† C. S. D. Don,‡ I. G. Innes,‡ Edward James,‡ Beatrix B. Law,‡ Roderick Mackay,‡ Katherine C. Spence‡, Walter Graham, Robina Inkster, Alexander Johnstone, Moore Taylor, and W. L. Yell.

*Awarded highest honours for thesis. †Awarded honours for thesis. ‡Awarded commendation for thesis.

M.B. and Ch.B.—B. S. Cran * and J. A. Gordon * (with second-class honours); Henry Aitken, R. D. Bruce, D. D. Callaghan, S. E. N. Chinniah, Andrew Dickson, William Fettes, J. S. Firth, H. M. Gray, Norman Jolly, J. S. Lawrie, A. W. R. MacKenzie,* R. J. Mackenzie, M. M. Milne, J. L. Nicol, J. M. Paterson, C. S. Philip, Margaret F. Reid, J. S. Robertson, W. M. Smith, Andrew Stephen, C. H. Strachan, Alfred Wilkie,* G. A. Wilson, and J. A. D. Wyness.

* Completed Final Medical Professional Examination with distinction.

B.Sc.—Wilfrid Marshall, M.D.
D.P.H.—J. L. Gammie (with credit), J. R. W. Hay, and A. J. W. Wilkins.

UNIVERSITY OF DUBLIN.—At a meeting of the Senate on June 30th the degree of M.D. was conferred on C. R. Boland, W. S. Dickson, and H. J. Hugo. At recent examinations the following candidates have been successful:—

FINAL EXAMINATION FOR M.B., B.CH. AND B.A.O.

Part I., Therapeutics, Pathology, &c.—*Eva E. Moore, F. O. Pilkington, J. T. Robinson, R. T. O'Shea, Dora G. Bradley, E. S. Tweedy, Frances E. Wilson, R. E. Hemphill, W. A. Robinson, Kathleen A. Wilson, and N. S. Klass.
Part II., Medicine.—C. P. Martin, E. K. Malone, Julius Sayers, D. M. Brink, I. F. Ratthaus, R. H. Bland, Julius Horwich, Nathaniel Burstein, R. I. G. Reid, and J. M. M'Elligott.
Surgery.—W. J. E. Jessop, C. P. Martin, G. W. F. Pratt, I. W. Pigott, H. S. Smithwick, R. F. W. K. Allen, R. H. Bland, E. S. Adderley, Nora A. Stack, D. S. P. Wilson, F. O. W. A. Mahon-Daly, H. R. F. Tweedy, D. M. Brink, E. C. Hicks, Mollie Finegan, A. J. Burden, H. J. Robinson, Marie M. E. Lea-Wilson, and L. R. H. Keatinge.
Midwifery.—*G. C. Dockeray, A. G. Thompson, M. H. Fridjhon, M. E. Kirwan, L. L. Griffiths, W. R. Johnston, Josephine M. Enright, Anna M. E. M'Cabe, J. E. C. Cherry, N. H. Lindsay, and W. A. Y. Knight.

DIPLOMA IN PUBLIC HEALTH.

Part I.—C. R. Nunan, R. A. Q. O'Meara, *Sarah Walsh, Michael Casey, W. A. Dickson, and Mary E. Ryan.
Part II.—C. R. Nunan, P. H. Lemass, Kathleen M. Ball, and Alice E. S. Delany.

DIPLOMA IN GYNÆCOLOGY AND OBSTETRICS.

Eva Ho Tung.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

Parts I. and II.—K. K. Drury.

* Passed on high marks.

CONGRESS OF SURGERY IN FRANCE.—The thirty-seventh French Surgical Congress will meet at Paris from Oct. 8th to 13th. Subjects on the agenda are the present status of spinal anæsthesia, the remote results of surgical treatment of duodenal ulcer, and the remote results of cranial trepanning for injuries.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The annual election of Fellows into the Council was held on July 5th. There were 12 candidates for four vacancies, and the following were elected: Prof. R. E. Kelly (Liverpool), 446 votes; Mr. F. J. Steward (London), 409 votes; Mr. R. G. Hogarth (Nottingham), 407 votes; and Prof. L. P. Gamgee (Birmingham), 399 votes. The number of voting papers received was 1169.

UNIVERSITY OF LONDON: *University College.*—Dr. John Kirk has been appointed demonstrator in the department of anatomy and embryology.

UNIVERSITY OF BIRMINGHAM.—At a Congregation held on June 30th the degree of M.D. was conferred on I. de B. Daly, J. F. Brailsford, and F. W. M. Lamb. The degrees of M.B. and Ch.B., and B.D.S. were conferred on the candidates whose names were given on p. 44 of our last issue as having passed the requisite examinations.—The Queen's scholarships for the third, fourth, and final year were awarded to K. S. Williams, W. C. Smallwood, and G. H. Knight respectively; the Ingleby scholarships to F. R. Roberts and A. B. Taylor, the Arthur Foxwell Memorial medal to A. B. Taylor, the Peter Thompson prize in anatomy to James Hardman, and the Samson Gamgee Memorial medal for surgery to G. H. Knight.

Dr. Frank Gower Gardner, of Oxford, Captain R.A.M.C. (T.) (ret.), has been elected County Director of the British Red Cross Society for Oxfordshire in place of Colonel Stanier Waller, resigned.

COLLEGE OF NURSING.—The College's petition for a Royal Charter, placed before the Privy Council by Sir Cooper Perry, has been successful.

IT is announced that Dr. F. d'Herelle, who has recently been working in India on the treatment of cholera by bacteriophage, has been appointed professor of bacteriology at the Yale School of Medicine, Connecticut, U.S.A.

BRITISH INSTITUTE OF PHILOSOPHICAL STUDIES.—The annual general meeting of this institute will be held at the Royal Society of Arts, 18, John-street, Adelphi, London, W.C., on Monday, July 16th, at 5.30 P.M. The Earl of Balfour will preside and deliver a short address. Other addresses will be given by Sir Robert Horne, Sir Martin Conway, and the chairman of the institute, Prof. L. T. Hobhouse.

INTERNATIONAL CONGRESS OF PHYSIOLOGY.—The thirteenth International Physiological Congress will meet at the Medical School of Harvard University, Boston, Massachusetts, from August 19th to 23rd, 1929. The Federation of American Societies for Experimental Biology will serve as hosts to the Congress, and Prof. William H. Howell, of Johns Hopkins University, will be the president. The arrangements for the Congress are in charge of Prof. Walter B. Cannon, of the Harvard Medical School, who is chairman of the Congress Bureau, and Prof. Edwin J. Cohn and Alfred C. Redfield, who are the secretaries.

POST-GRADUATE COURSES IN PARIS.—Holiday courses will be held at the Clinique Médical de l'Hôtel-Dieu from Sept. 10th to 22nd, and from Oct. 1st to 13th, under the direction of Prof. P. Carnot and Prof. M. Villaret. The subjects will be, respectively, Recent Views of Diabetes and Hepatic Diseases, and Recent Views of Digestive Disorders. The interval will be spent in a visit to Vichy. A course on pædiatrics will be held at the Clinique Médicale des Enfants, 149 rue de Sèvres, from July 26th to August 11th, under the direction of Prof. Nobécourt. Those wishing to attend any of these courses should communicate with the Secretary of the Faculty of Medicine (Guichet No. 4) of the University of Paris.

FIRST INTERNATIONAL CONGRESS OF OTO-LARYNGOLOGY.—This Congress takes place at Copenhagen on July 30th and 31st and August 1st, 1928, and intending visitors should send in their subscription without delay. This has been fixed at 30 Danish kroner per head, with the addition of 15 Danish kroner for every lady in the party, and payment can be made with an English cheque if this be dispatched at once to the hon. treasurer, Dr. Jorgen Moller, Vestre Boulevard 13, Copenhagen. On receipt of the subscription a programme will be dispatched from Denmark giving a list of the festivities and excursions in connexion with the Congress and a form on which should be entered an application for the tickets desired. The application form should be returned without delay to the Secretary-General, Dr. N. Rh. Blegvad, Nytorv 3, Copenhagen. Those who have not already secured hotel accommodation should apply at once to Bennett's Tourist Office, 45, Raadhuspladsen, Copenhagen V., while particulars and tickets for the journey can be obtained from Messrs. Bennett, 66, Haymarket, S.W. 1, and Messrs. Thos. Cook and Son, Berkeley-street, W. 1.

Prof. Share Jones, Professor of Veterinary Science at the University of Liverpool, has been appointed President of the Royal College of Veterinary Science.

SANATORIUM'S CHANGE OF NAME.—Highfield Sanatorium, in Edge Lane Drive, Liverpool, will in future be known as Broadgreen Sanatorium.

OSTEOLYSIS IN THE MOUTH.—We are informed that a series of photomicrographs by Dr. Arthur Hopewell-Smith, illustrative of the process of osteolysis as it occurs in the oral cavity, has been added to the annual exhibition of the Museum of the Royal College of Surgeons, Lincoln's Inn-fields, London, W.C. The exhibition will remain open until July 28th.

EXTENSION OF JENNY LIND HOSPITAL.—Mrs. Raymond Maude, daughter of the foundress, has laid the foundation-stone of a new out-patient and special department block of this Norwich hospital for children. The extension, which is being partially paid for by a grant from the Norwich Joint Hospitals and War Memorial Fund, includes accommodation for the electrical, X ray, and massage departments. Mrs. Maude also opened Pym House, a nurses' hostel, formed by throwing two houses into one, which has been provided from a bequest by the late Mrs. Radford Pym.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, July 16th, to SATURDAY, July 21st.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Broad-street, Holborn, W.C. Special afternoon demonstration in Ophthalmology at 3 P.M. on Thurs., by Mr. Caddy. No fee.—PRINCE OF WALES'S HOSPITAL, Tottenham, N. Second week of course in medicine, surgery, and the allied specialties. Daily 10.30 to 5.30 P.M. Further information from the Secretary.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, July 16th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

Appointments.

DON, C. S. D., M.B., Ch.B. Aberd., has been appointed Honorary Assistant Physician, Salford Royal Hospital.

FORREST, A. W., M.D., Ch.B. Edin., D.P.H., Medical Officer of Health and School Medical Officer for Leyton.

RUSSELL, G. J. C., M.B., Ch.B. Manch., D.P.H., Assistant Medical Officer for Maternity and Child Welfare, Leeds Corporation.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne, Lake Hospital and Darnton House.—2nd. Res. Asst. M.O. £150.

Birmingham, Queen's Hospital.—Med. Reg. Also 3 Res. Surg. Officers. £200 and £100 respectively.

Birmingham University.—Walter Myers Travelling Studentship. £300.

Cambridge, Addenbrooke's Hospital.—Resident Anæs. At the rate of £180.

Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Jun. H.S. £50. Also Pathologist. £75.

Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C. 2nd. Res. H.S. £75.

Coventry, Coventry and Warwickshire Hospital.—Res. H.P. £125.

Durham County Sanatorium, Hollywood Hall, Wolsingham.—Locum. 9 guineas per week.

East London Hospital for Children, &c., Shadwell, E.—Res. M.O. £200.
Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120.
Exeter, Royal Devon and Exeter Hospital.—Hon. Asst. P.
Exminster, Devon Mental Hospital.—Jun. Asst. M.O. £300.
Great Yarmouth General Hospital.—H.S. £150.
Harefield, Middx., County Tuberculosis Sanatorium.—Sen. Asst. Res. M.O. £450.
Leeds City Hospitals.—Med. Supt. £850.
Leeds Public Dispensary.—Sen. Res. M.O. £200. Also Hon. P.
Liverpool, Royal Children's Hospital.—Res. M.O. At rate of £120. Also two Res. H.P.'s and two Res. H.S.'s. Each at rate of £60.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.
London School of Hygiene and Tropical Medicine, 25, Gordon-street, W.C.—Research Student in Tropical Pathology. £250.
Marseilles, Queen Alexandra Memorial Hospital.—Res. M.O. At rate of £150.
Middlesex Hospital and Medical School.—Surgical Registrarship. At rate of £300.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Norwich, Norfolk and Norwich Hospital.—H.S. £120.
Nottingham, City Mental Hospital.—Jun. Asst. M.O. £350.
Nottingham General Hospital.—Res. Cas. O. At rate of £200.
Nottinghamshire County Council and Mansfield Woodhouse Urban District Council.—Joint M.O. £700.
Portsmouth, Royal Portsmouth Hospital.—Sen. H.S., also Cas. O. At rate of £200 and £100 respectively.
Preston and County of Lancaster Royal Infirmary.—H.P. and H.S. £190 and £150 respectively.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal Army Medical Corps.—Commissions.
St. John's Hospital, Lewisham, S.E.—Res. H.O. Also Res. Cas. O. Each at rate of £100.
St. Luke's Hospital, Chelsea, S.W.—Consulting Physician. 100 guineas.
Society of Apothecaries of London.—Examiner in Midwifery.
Staffordshire, Lechfield County Laboratory.—Bacteriologist. 10 gns per week.
Taunton, Taunton and Somerset Hospital.—Sen. and Jun. House M.O.'s. At rate of £150 and £100 respectively.
West London Hospital, Hammersmith-road, W.—Res. Asst. Surg. £200.
Woolwich and District War Memorial Hospital, Shooters' Hill, S.E.—Sen. H.S., also H.P. Each at £125.
Worcester County and City Mental Hospital, Powick, near Worcester.—Jun. Asst. M.O. £300.

The Chief Inspector of Factories announces the following vacancies for Certifying Factory Surgeons: Falkland (Fifeshire), Bourton (Dorsetshire), Rothwell (Northamptonshire), Llanfairfechan (Carnarvonshire), Wirksworth (Derbyshire), and Crook (Co. Durham).

Notice is given of a vacancy for a Medical Referee under the Workmen's Compensation Act for Edinburgh City and Linlithgow County (Sheriffdom of the Lothians and Peebles). Applications should reach the Private Secretary, Scottish Office, Whitehall, London, S.W., not later than July 28th.

Births, Marriages, and Deaths.

BIRTHS.

BATEY.—On July 4th, at Beaufort House, Ealing, W., the wife of Maurice Batey, L.D.S. R.C.S. Eng., of a son.
DIX.—On July 6th, 1928, at 11, Alexandra Park-road, N. 10, to Nan, the wife of Victor Dix, F.R.C.S.—a daughter.
HERN.—On July 2nd, at Lexham-gardens, W., the wife of Dr. J. R. B. Hern, of a daughter.
KINGDON.—On July 4th, the wife of A. T. L. Kingdon, M.R.C.S., L.R.C.P., of South-street, Leominster, of a daughter.

DEATHS.

BOWKER.—On July 6th, at North Parade, Bath, George Edward Bowker, M.D. Edin.
PARSONS.—On July 2nd, at Bournemouth, John Inglis Parsons, M.D., M.R.C.P., M.R.C.S., aged 71.
PRITCHARD.—On July 6th, W. Clowes Pritchard, M.R.C.S., L.R.C.P., of Hastings.
STONEY.—On July 5th, at Abbeyleix, Ireland, Hugh Baker Stoney, M.B.
WIGGINS.—On July 3rd, suddenly, Charles Wiggins, M.R.C.S., L.R.C.P., of Argyll, Fortis Green, East Finchley.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. I., 1928.

THE Index and Title-page to Vol. I., 1928, which was completed with the issue of June 30th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

Notes, Comments, and Abstracts.

HOSPITAL LAW.

LIABILITY OF HOSPITALS AND THEIR PROFESSIONAL STAFFS.

BY CAPTAIN J. E. STONE, *M.C.*, F.S.A.A.,
HON. SECRETARY, INCORPORATED ASSOCIATION OF HOSPITAL OFFICERS.

II.*—LIABILITY OF SUBORDINATES.

PHYSICIANS and surgeons of a hospital are not necessarily liable for injury caused by the carelessness of their subordinates in carrying out the treatment ordered by them, unless it can be shown that the matter was one which ought not to have been left to a subordinate, or that they had themselves neglected some precautions which ought to have been taken, or had superintended or been present at the carrying out of the treatment. Thus, where a patient was severely scalded by reason of the negligence of a nurse in administering a hot bath ordered by the surgeon, it was held that the surgeon was not liable. It was proved to be the usual hospital practice to leave it to the nurses to see to the baths. The decision, however, does not deal with the question whether or not the hospital itself was liable for the negligence of the nurse.

A sister or nurse may equally be liable for negligence in carrying out the duties entrusted to her. In the case above mentioned, the action which failed against the surgeon would probably have succeeded against the nurse. Members of the nursing staff may also incur liability if they exceed the duties assigned to them; their functions are subordinate to those of the physician and surgeon, and any attempt by nurses to usurp the place of a qualified medical officer might place them in peril.

Where the injury to a patient is the immediate result of intervening negligence on the part of the patient himself, or where the patient by his own carelessness directly contributes to it, the patient's contributory negligence is a good defence to an action. Where, however, damages are obtainable, and the patient dies, they may be recovered for the benefit of his or her wife, husband, parent, or child.

Criminal Negligence.

There is a distinction between the negligence which gives right to damages in a civil action and the negligence sufficient to support a conviction in a criminal case. The distinction, however, is not clear, and it is perhaps rather a question of degree. Gross negligence is of two kinds, as for example: (1) when a physician deliberately neglects his patients; and (2) when a person without skill in his profession ignorantly and rashly uses dangerous medicine. Criminal liability is incurred by a competent person for death occasioned by gross want of care; as, for example, by insufficient attention to a woman after her confinement. Malpractice, which generally means an unprofessional treatment of disease, pregnancy, or body injury, either from gross carelessness or ignorance, or with criminal intent, would certainly extend to the performance of operations for mere curiosity or experiment, which is a criminal offence. *Mala praxis* is a great misdemeanour and offence at common law (whether it be for curiosity or experiment, or by neglect), because it breaks the trust which the party has placed in the physician. Doctors and nurses may therefore incur personal liability: (*a*) to an action for damages for incompetence and negligence; (*b*) to criminal proceedings for malpractice and criminal negligence.

Relationship of Professional Staff to Hospital.

As liability for criminal acts cannot extend beyond the persons themselves, it is only in respect of their liability to a civil action that the question of the consequent liability of the hospital whom they represent need be considered. It is clear that the foundation of any such liability must rest upon the law of agency. The general doctrine of law is that although the principal is not ordinarily liable (for he sometimes is) in a criminal suit for the acts or misdeeds of his agent, unless indeed he has authorised or coöperated in those acts, &c., yet he is held liable to third persons in a civil suit for the frauds, deceits, concealments, misrepresentations, negligences, and other malfeasances or misfeasances and omissions of duty of his agent in the course of his employment, although the principal did not authorise, justify, participate in, nor indeed, know of such misconduct, or even if he forbade the acts or disapproved of them. In

* The previous article of this series appeared in THE LANCET of April 28th, p. 895.

all such cases the rule applies *respondeat superior*, and it is founded upon public policy and convenience, for in no other way could there be any safety to third persons in their dealings, either directly with the principal or indirectly with him through the instrumentality of agents. In every such case the principal holds out his agent as competent and fit to be trusted, and thereby in effect he warrants his fidelity and good conduct in all matters coming within the scope of his agency.

Who are servants of a hospital?—The principle is well established that a master is liable for the negligence of his servant who is acting in the course of his employment. This principle of liability applies to hospitals in the same way that it applies to individuals. The term "servant" has in law a much more restricted meaning than that which is popularly attributed to it. A servant has been defined as—"Any person employed by another to do work for him on the terms that he, the servant, is to be *subject to the control and direction of his employer* in respect of the *manner* in which his work is to be done." A servant as thus defined must be distinguished from an independent contractor. The test is the existence of a right of *control* over the agent in respect of the *manner* in which his work is to be done. A servant is an agent who works under the supervision and direction of his employer; he is employed to obey his employer's orders from time to time. An independent contractor is one who is his own master; he is engaged to do certain work, but he exercises his own discretion as to the mode and time of doing it. A hospital board will accordingly be responsible for the negligent acts or omissions of a servant in the course of his employment. The servant must be in the employ of the board at the time the acts complained of are done.

Who of those persons appointed by hospitals are servants of the hospital? This question must be answered in respect of every individual or class of officers. The persons engaged in a hospital may for convenience be classified as follows: (1) Physician and surgeons (including house officers, anæsthetists, and specialists); (2) nursing staff; and (3) lay or non-professional staff.

With regard to the first named class it has been expressly decided (Hillyer *v.* Governors of St. Bartholomew's Hospital) that the relationship of master and servant does not exist between the governors of a hospital and the physicians and surgeons who give their services to the hospital. It was held that they are professional men, employed by a hospital to exercise their profession to the best of their abilities according to their own discretion; but in exercising it they are in no way under the orders nor bound to obey the directions of the hospital authorities. It is true that a hospital has power to dismiss these officers, but it has this power, not because they are servants, but because of its control over the hospital where their services are rendered. A staff surgeon or physician then is not an employee of the hospital but holds an independent professional relation; he, not the hospital, is liable for his acts, and by reverse reasoning the hospital would not be liable for injuries which he might suffer in the course of his work in the hospital. A medical superintendent is, however, more directly associated with the board. He is, in general, appointed by the board at a fixed salary under a special contract with the board, and usually has control over all departments of the hospital, and the treatment of the patients therein. It may be contended, however, that as far as the treatment of patients is concerned, he is not a servant of the board because he is not subject to the control of the board as to the mode of treatment he adopts. The degree of control which a board may exercise over a medical superintendent undoubtedly varies in different cases, but it is most unlikely that in every case a board would have the power of dictating in what way he should conduct operations or treat patients. This is entirely a matter for the superintendent in the exercise of his professional skill and knowledge. House officers are employees of the hospital when acting under the direction of the hospital authority, but they also hold a quasi-professional relationship, and in addition they have a special relation to the physician or surgeon whom they may be asissting. In Cooper *v.* Mirron and Another, a house officer was held liable for so extracting a tooth that a part broke off and passed down the windpipe. The accident was not reported to his senior; pneumonia set in, and the patient died.

With regard to the second class, the position of the nursing staff of a hospital is, however, not so clearly defined. They are engaged by the board at fixed salaries, their hours of attendance in the wards and general duties are prescribed by the board by whom they are paid and by whom they may be dismissed. These features point to the fact that they are servants of the board; for all general purposes this is undoubtedly the correct view, but they are not so for the purposes of operations and examinations by medical officers. Nurses (and indeed other officials) assisting at operations cease for the time being to be servants of the hospital inasmuch as they take their orders from the operating surgeons alone and not from the hospital authorities. Can they be deemed the servants of the board when attending patients in the wards and acting in their professional capacity? All nurses require a special training to fit them for their occupation, and it may be argued that they are not subject to the control of the board in the manner in which they do their work. In their treatment of, and attendance on, patients, they act either under the direction of physicians or in accordance with their professional skill and knowledge. The board is not, it is contended, in a position to dictate in what way the work is to be done. Although it fixes the hours, supplies necessary board and lodging, pays and dismisses nurses, it cannot control them in the exercise of their profession as nurses. From this point of view they are not the servants of the board in the course of any of their professional duties. The dicta of Kennedy L.J., in Hillyer *v.* St. Bartholomew's Hospital support this view. He classes nurses as experts along with physicians and surgeons, and states that, provided the board has been reasonably satisfied as to their competency, it will not be liable for their negligence. This of course refers only to the conduct of the staff in matters of *professional skill*, in which the board *neither do nor could not properly interfere* either by rule or supervision. The board would, it is contended, be legally responsible to the patients for the due performance of their servants within the hospital of their purely *ministerial or administrative duties*, such as for example, attendances of nurses in the wards, the summoning of medical aid in cases of emergency, the supply and service of food, and the like. The board ought to make, and invariably does make, its own regulations in respect of such matters of routine, and it is obviously legally responsible for their sufficiency, their propriety, and observance of them by their servants. The scope of these ministerial duties or matters of routine is difficult to define. It will generally be found that most of the duties of the nurse are professional, and required special skill or knowledge. In matters, however, which do not require special skill nor knowledge, nurses must be regarded as the servants of the board, and in such matters the board may properly interfere. These matters will be few in number, and a nurse will, therefore, in general not be the servant of the board.

All other officials and employees about the hospital are with certain exceptions, servants of the board. Exceptions occur when they are working under the exclusive control of physicians and surgeons and other medical and nursing experts.

The Duty and Obligations of the Board.

Although the board is not responsible for the negligence of its professional staff in the exercise of their profession, it is under the duty to see that the professional staff employed by it are competent. It undertakes that the patients in and attending the hospital will have competent advice and assistance. (Evans *v.* Liverpool Corporation). The governors of a hospital, by their admission of the patient to enjoy in the hospital the gratuitous benefit of its care, tacitly undertake that the patient whilst there shall be treated by experts, whether surgeons, physicians, or nurses, of whose professional competence the governors have taken reasonable care to assure themselves; and further, that these experts shall have at their disposal for the care and treatment of the patient fit, adequate, and proper apparatus and appliances. There is no right legal inference from the circumstances of the relation of hospital and patient that the hospital authority makes itself liable in damages if members of its professional staff, of whose competence there is no question, act negligently towards the patient in some matter of professional care or skill, or neglect to use intelligently in their treatment the apparatus or appliances which are at their disposal. If, then, a hospital board exercise reasonable care in the selection of its professional staff by requiring satisfactory evidence of their competency, it will not be liable subsequently for the negligence of its staff. If, of course, for any reasons it has good ground to doubt the competency of any member of its staff under circumstances which would justify it in dismissing such member, it should do so.

Paying Patients.

In Foote *v.* Shaw Stewart, an attempt was made to distinguish the circumstances from the St. Bartholomew's case, in respect that the Greenock Hospital authorities, by receiving a fee of £2 2s. from the patient, undertook that the treatment which she should receive from the doctors would be reasonably skilful and careful. Otherwise stated, this argument implied that though to the ordinary charity or non-paying patient the duty of the hospital was simply to provide the services of a competent staff of medical men, yet to a paying patient they were bound to ensure a special degree of medical care and attention, or a guarantee of skill on the part of the surgeon. The court held that, in the absence of a contract much more specific and definite than could be implied from the plaintiff's arguments, they could make no distinction between the two cases.

A MEDICAL JOURNAL FOR CUBA.

THE *Anales de la Faculdad de Medicin y Farmacia*, of which the first two numbers have reached us, is described as a quarterly publication, started to record the work of the Medical Faculty of the University of Havana at a moment when it seems to be undergoing some reorganisation and reconstruction. Among the contributions there is none of outstanding importance, but several of considerable interest. Prof. P. Escudero, of Buenos Aires, states his views on "latent diabetes," which he differentiates from "diabetes occulta" by the fact that there is no hyperglycæmia; which, however, can be produced by a method of dieting which he has devised and terms blocking of the pancreas. The cases are characterised clinically by various chronic disorders, and can be cured by large doses of insulin, of which they are very tolerant. There are also in the first number papers on a case of benign giant-celled tumour of the metacarpals, endothelioma of the skin, prostatotomy in retention due to acute gonorrhœal infection, and the surgery of the thyroid. In the second number there is an article on a case of multiple myelomata in an infant beginning before 17 months of age and ending with albumosuria. Prof. Pardo Costello deals with the relation between herpes and varicella and concludes that it is accidental. Dr. Ostiz Machado describes some experiments on the production of nephritis in rabbits by administering sodium chloride with a vegetarian and milk diet respectively, and also by giving white lead. A paper in the first number on the selection of medical students is interesting as revealing the fact that the teaching schools of both North and South America are seriously hampered by the great and persistent increase in the number of students seeking to enter the medical profession, an increase out of proportion to the needs of the population, and in the Latin republics, at all events, partly due to social ambition.

THE POTENTIAL ENERGY OF THE FŒTUS.

A SOMEWHAT new conception of obstetrical mechanics is contained in a lecture delivered last year before the Obstetrical Society of Vienna by Dr. J. F. Beruti, of Buenos Aires, which has been published in the *Semana Médica* (April, 1928, p. 937). Starting from the work of Sellheim, of Leipzig, the author claims that he does not go far enough in his conception of the fœtus as an active agent in parturition. With the aid of ingenious models made to represent the mechanism of labour he believes he can show that there are two kinds of active fœtal reaction, which originate from the double resistance of the maternal canal and the fœtus itself. The first is the potential energy or elasticity of the fœtus and the second is muscular contraction. The second factor is said to be the cause of the change of position of the head sometimes observed during labour in the pauses between uterine contractions. Little other clinical evidence is adduced in favour of Dr. Beruti's view.

APPARATUS FOR INDUCING ARTIFICIAL PNEUMOTHORAX.

Dr. F. de V. Kováts[1] describes and illustrates a new instrument which appears to be a definite advance on those now employed for the induction of artificial pneumothorax. It consists of two cannulæ, one of which, having a blunt end and a lateral aperture, fits closely into the other, which has a sharp point and a terminal opening. The other ends of the cannulæ are so arranged that by turning a flange the inner cannula takes up one of three positions. In the first position the blunt end of the inner cannula lies wholly within the outer; in the second the blunt end of the inner cannula is made to project beyond the sharp end of the outer, but the lateral aperture is not exposed; in the third position, by a further turn of the flange, this aperture becomes exposed.

The technique for the induction of pneumothorax is as follows. The instrument is attached to the pneumothorax apparatus, and with the cannulæ in the first position the needle is pushed through the skin almost down to the parietal pleura. A turn of the flange allows the blunt end of the inner cannula to be pushed beyond the sharp point of the outer, and the pleura is then punctured with the blunt end, after which the flange is again turned to expose the lateral aperture of the inner cannula to the pleural cavity. The manometer at once registers the intrapleural pressure and the air can then be injected.

The advantages of the apparatus appear to be: (1) the oscillations of the manometer indicate that the pleural space has been reached as soon as the parietal pleura is pierced; (2) the danger of puncture of the lung is lessened by the fact that the inner cannula has a blunt end; (3) the lateral aperture cannot be blocked by pieces of skin or other tissue; (4) no manipulation of the needle is necessary after the pleural space has been reached; (5) the possibility of air embolism is almost negligible; and (6) the same apparatus may be used for both the induction and the refills of the pneumothorax cavity.

[1] Deutsch. med. Woch., May 25th, p. 875.

WOMEN'S HOLIDAY FUND.

To the Editor of THE LANCET.

SIR,—The result of our yearly appeal in the press has been of such value in the past that we trust you will once more allow us space in which to plead the cause of this Fund. Just now many fortunate people are engaged in the all-important task of making plans for their summer holiday—a delightful and necessary change of scene. We would ask them not to forget the many hundreds of women in London who have little chance of getting away from the monotony of their daily life, who in many cases have never tasted the joy of a seaside or country holiday, and whose health is suffering in consequence. This Fund, which was founded in 1895, organises every summer a fortnight's holiday at the seaside for many of these tired women who contribute what they can towards the full cost (£3 for a fortnight including railway fare). Last year 864 women were sent away and 500 of these took their babies. Will all holiday-makers help us to increase the number this year by sending some contribution, however small, to the Secretary, Women's Holiday Fund, Denison House, Vauxhall Bridge-road, S.W. 1.

We are, Sir, yours faithfully,
A. F. LONDON.
MANUEL L. BIDWELL,
J. SCOTT LIDGETT,
HELEN A. POWNALL
(Chairman of Executive Committee).

76, Denison House, 296, Vauxhall Bridge-road, S.W.,
July 10th, 1928.

AN INTERESTING DINNER.

A DINNER was given by the proprietors of Eno's Fruit Salt on Friday, July 6th, at the Savoy Hotel, Colonel Alhusen, the chairman of the Company, presiding over a large gathering. The occasion was made interesting by the opening which it gave for admirable speeches from Sir Robert Horne, late Chancellor of the Exchequer, and Mr. Amery, the Colonial Minister, who approached the subject of honest trading from completely different angles, but pointed out alike that in its success resided the finest promise for the conduct of imperial affairs. Sir Robert Horne, from vast personal experience, spoke of the value to the British trader of maintaining and extending relations with the Dominions, and probably surprised his audience by stating the ratios of trade between the mother country and the continent on the one hand, and the mother country and our dependencies on the other. The conclusion that it is to the interest of all to promote the colonial markets was inevitable on his showing. To the guests at the dinner there was presented a charming brochure written by a well-known group of journalists and experts and illustrated, among others, by Mr. Arthur Rackham, Mr. E. J. Sullivan, Mr. Lewis Baumer, and Mr. Bernard Partridge. Save Mr. Partridge's introductory cartoon both articles and pictures were deliberately humorous, but at the same time a clear picture of a leading figure in the early Victorian era of commerce emerged in a contemporary environment.

Messrs. H. K. Lewis, of 136, Gower-street, London, W.C., have published a pamphlet setting out the services which they render to the medical profession, and describing the progress of their business since its foundation in 1844. Besides their bookselling department, which executes orders by post, they maintain a large circulating library intended to meet the needs of those who wish to keep in touch with the latest opinions and discoveries. A monthly list of new books and new editions added to the library is sent regularly post free, and a reading and writing room for subscribers is provided. The library contains some 30,000 volumes, and the complete catalogue, revised to December of last year, with upwards of 18,000 titles, will be published shortly. Surplus copies of books withdrawn from circulation are sold at reduced prices in the second-hand department, 140, Gower-street, where a large stock of books is always kept. Scarce books or those out of print are advertised for without charge and reported when found.

The Radiotherapy of Cancer.—The personnel of the subcommittee of experts charged by the Cancer Commission of the League of Nations with the study of radiotherapy of cancer was given in THE LANCET last week. The description of Mr. Comyns Berkeley should have run: Director of the Gynæcological Service, Middlesex Hospital Cancer Charity.

"Swimeezi" Bathing Costume.—We are informed that the address of the Institute of Patentees referred to in our notice of the above invention is now at 39, Victoria-street, Westminster, S.W. 1.

Dedication Address
ON
MEDICAL AND NURSING SERVICE.

Delivered on June 26th at the Inauguration of the Hospital and Nursing Centre established by the Frontier Nursing Service of Kentucky

BY SIR LESLIE MACKENZIE, M.A., M.D., LL.D.,
FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, EDINBURGH; FELLOW OF THE ROYAL SOCIETY OF EDINBURGH; EX-MEMBER OF THE SCOTTISH BOARD OF HEALTH; CROWN NOMINEE FOR SCOTLAND ON THE GENERAL MEDICAL COUNCIL OF GREAT BRITAIN.

THE Frontier Nursing Servite already know the work of the pioneers in preparing the way for this assembly of inauguration and dedication. It is a story full of adventure, sacrifice, passionate enthusiasm and splendid initiative. When, some years ago, Mrs. Mary Breckinridge came to us in Scotland to see how we had faced a similar problem in medical service and nursing, we were filled with a new sense of the significance of the work we had tried to do in the thinly peopled and difficult areas of Scotland. When, therefore, I was invited by the Frontier Nursing Service of Kentucky to give verbal form to the dedication of the hospital and nursing system now established in these mountains, I felt, indeed, a glow of supreme satisfaction that our work in Scotland had found an echo in the great spaces and mountains of an American Commonwealth. The invitation was a call of the Highlands to the Highlands. It is a symbol of kinship in feeling and outlook. It is the lightning spark that reveals the essential unity of our culture. An invitation coming with this warmth and delicacy of imagination, I could not refuse and, in the name of the Scottish Highlands, I accepted it with my whole heart. When my wife and I, more than 35 years ago, dedicated our lives to the service of Scotland, we could not foresee that now, when our work is nearing its end, we should be gladdened and newly inspired by this fine compliment to our Northern Kingdom. But the privilege and honour you have conferred upon us will make it easier for us to pass into the twilight of our lives, remembering the lights and sounds and silences of these historic creeks and mountain passes and pathways.

Perhaps, however, my presence here is due to a deeper cause. I was born in Easter Ross, within sound of the North Sea and within sight of the mountains of Ross and Inverness. From my earliest memories, I have known something of the difficulties of Highland life, and when I passed into the National Service I came to the health problems of the Highlands and Islands with some understanding of the inner minds and aspirations of the people, of the difficulties due to a long and losing struggle with poverty and of the problems created by centuries of European invasion, whose story is lost in legend and mystery. The more one studies things as they are to-day, the more one is impressed with the infinite complexities of the growth of peoples. At this hour, the ten million acres of the Highlands and Islands of Scotland have scattered over them a population less than the city of Edinburgh. In our Highland area, as defined by statute in the Highlands and Islands Medical Service Act, the peoples number approximately 320,000 only. But these are scattered in islands as far north as the Shetland group, about 120 miles from the mainland of Scotland; the Orkney group, mostly visible from the mainland; the Fair Isle, a solitary island of some 200 people lying between the two groups; the remote island rock of Foula with perhaps another 200; the Out Skerries with 30 or 40 families, and then the Outer Hebrides, from Lewis to Barra, with a total population of 44,000, or the remote Atlantic rock of St. Kilda, where the population within my official life-time of 27 years has fallen from 76 to 45. No doubt, it is these varieties of difficult administration that have fascinated Mrs. Breckinridge in looking for a parallel with the difficulties of the Kentucky mountains, and there are many parallel conditions in the two countries. But most striking, perhaps, is the parallel in character and outlook, the disposition due to the necessity of facing the forces of nature alone, the relative sterility of the hills and glens, as well as the ferocities of the wind and the sea.

AN ADMINISTRATIVE DIFFICULTY.

From the map it is easy to see why the Highlands and Islands are an administrative difficulty. When a population approximately equal to the city population of Edinburgh is scattered over three-fourths of Scotland and parcelled out among the hills, the valleys and islands, the mere geographical dispersal gives rise to innumerable and persistent local problems of feeding, housing, and transport. This would be true even if the dispersed people all belonged to a single variety of civilisation. But in the Highlands and Islands are to be found strata of many civilisations. There are differences in belief, in custom, in variety of segregation, in economic sufficiency, in race, in political affinity. In every Government department—poor law, lunacy, public health, agriculture, fisheries, prisons—all these factors have to be reckoned with, and unending records show how difficult the individual problems are. Among the western islands—the Hebrides—there is scarecly one that has not its little internal war between the local middle-man and the island producer, or between the crofter and the big estate, or again, between the land interest and the industrialised fishing islands or towns, or between sections of the same island, where, perhaps, racial traditions block the way to complete assimilation, or again, between different religious groups, each claiming divine rightness for its own doctrines. Such mental segregations and specialisations often block the way to successful administration. These, and such as these, are the motive forces that have generated the complex machinery of our existing administration. The variations in the machine are reflected in the long series of commissions and committees that have had to investigate every phase of social life in the Highlands and Islands. The reports are only a record of efforts to compose the struggles of these variously civilised groups to maintain themselves, first against nature and next against their domestic enemies. Only a generation or two ago, it was "war to the knife" in the literal sense. To-day the struggles are as keen, but the methods of fighting are more subtle. But the kind of fact we constantly run up against is this: that conscription made almost no difference to the island of Lewis, with its 28,000 inhabitants, because nearly all the men of fighting age had already joined some fighting unit of land or sea; or, again, that one of the island groups most affected with tuberculosis sent relatively high proportions of men to the Navy; or that, in one parish of some seven thousand people, there are said to be 22 "places of worship," representing at least four, if not five or six, Protestant denominations; or, once more, that the Highlands and Islands send to the Universities of Scotland from 10 to 12 times as many persons in proportion to population as the rest of Scotland. The last fact I learned many years ago from my last schoolmaster, Dr. Dey, late Rector of the Grammar School of Old Aberdeen, who had the arranging of secondary departments for the Highlands Committee. A tutor of Oriel College, Oxford, once told me that the best philosophical student he had had in 30 years came from Stornoway. Recently, a book on the nature of "community" came on the philosophical world from "a young Canadian professor," who went to Canada, via Oxford, from Lewis, and is now a professor in Columbia University. How easy it would be to load pages with such facts, or with flashes of beauty from the lochs or voes, or romantic tales of old adventure, or

romantic songs from the living old world of music revealed to us by Mrs. Kennedy Fraser in her "Songs of the Hebrides"!

These things I name merely because they must be thought of as signs of the informing spirit whose organised embodiment for the purposes of our rough administrations we must state in crudely practical terms. Machines do not move of themselves, even Government machines. But the efforts of generation after generation to bring the Highlands and Islands within the working polity of modern Scotland make a pathetic record, whether we think of the suppressed clan system with its tribal wars, or the Scots Poor Law, beginning in 1424, and failing, by branding on the cheek, as it fails to-day by the poorhouse "test," to master or provide for the marginal citizen, or again, "the various crofter clearances," whose memory, in some glens and straths, is as bitter to-day as on the day they happened, or the abortive efforts to clean the islands of their people by emigration, or the failure of the potato crop, or the crofter's commissions, fisheries committees, medical committees, medical reports, attempted colonisations, medical service, and a dozen other things. These islands and glens have sent hundreds upon hundreds to the Western Continent, and to-day, among these mountains, we are in the neighbourhood of their descendants and we feel the atmosphere of the Scottish home. I have read something of the story of Daniel Boone (a man of Cornish stock) and the other pioneers, who fought their way from Pennsylvania down the valleys to the Yadkin and over these mountains into the heart of Kentucky, to help in forming the Commonwealth you now enjoy. I should like also to believe that, in these southern lands as well as in the harder north, the races and traditions of the Scottish Highlanders and Islanders have done something to help in the civilisations of the west.

Fundamental Unity of the Scottish and Kentucky Problems.

In one respect, the problem of the Kentucky mountains is essentially the same as the problem of the Scottish Highlands and Islands—namely, that the financial resources of the thinly peopled areas are rarely, if ever, sufficient to provide the same adequate services that the larger groups of population enjoy. That was the root of our problem in Scotland. It is the root of the problem in the Commonwealth of Kentucky. With us, it is largely a difficulty of the sea and its dangerous sounds, some of them impassable for weeks at a time. With you, it is largely a matter of land and river transport, where, however, the isolation may be just as great. Wherever we find the thinly populated islands or mountains, there we find difficulty in providing sufficient service. When we went the rounds of the Orkney and Shetland Islands, and the Hebrides, and many mountainous areas on the mainland, we had it said to us by many that the Highlanders were fatalists; that, in the last stages of life, they lost hope and were content to die, and that, therefore, medical or nursing service would be of little use. To a Highlander born in the Highlands this diagnosis of the social condition was only a proof of the Lowland failure to understand. How many a case I have heard of where the term "fatalism" was only a name for the proud personal independence that preferred death to the asking of favours! When, in the end, medical and nursing service has been provided, and the people feel that it is their own, they come forward in greater and greater numbers to utilise and enjoy the services provided through the State for themselves and their children. When the new movement began, even the doctors that went to the remote places were often deficient in training, or they were the men that had failed elsewhere. To-day, whenever a medical practice falls vacant anywhere, tens and twenties, and thirties and forties of medical men come forward, and the localities can choose from a highly trained body of medical practitioners. That is our answer to all that was said to us by the people that did not understand. You are having the same success as we had and for the same reasons.

Biological Groundwork of Medical and Nursing Service: Our First Two Years.

But let us look behind the administrative machine. Why is it necessary to take such immense trouble with the first stages of life? Why should the young infant require of us so much more active help and tender consideration than the child of later ages? To this question it is not easy in a few words to give an adequate answer. For here we are face to face with the fundamental problem of social life. The solution of it involves all that the world knows of biological theory. There must be centred in the new-born infant some fundamental fact that makes it, at that stage, different from every other human being. The great miracle of birth is protected by the most powerful of human motives—the love of the mother for her child. It is a motive stronger than the fear of death. In all ages of the world, the love of a mother for her child has commanded the worship of mankind. If you think for a moment you will understand that nothing less can preserve the life of the helpless new-born child. All our institutions for the welfare of mothers and their children have their taproot in the one great fact that when the child dies, the race dies, and when the race dies, the great fight between life and nature is over.

It is, therefore, our duty to do what we can to guide the mother and child safely through the many dangers that threaten them in the months of expectancy and in the few critical days or hours of the confinement. If I chose, I could take from the records of the maternity hospitals long tales of damaged mothers, whose lives have been made miserable for ever by inadequate attention, or by unskilled handling, or by the necessity for the premature resumption of household duty, or by some other unfortunate combination of preventable causes. But we are not now thinking of the mothers affected with disease or deformity; we are thinking only of the normal expectant mother, who wishes to have no misgiving when the hour of her confinement comes and who ought to have the organised care that is available to her only in the maternity home or at the hands of the scientifically trained doctor or nurse.

But there is a more fundamental reason for doing all we can to extend all the resources of the community to the care of the young human being. Consider what happens during the first year of a child's life. Its rate of growth is phenomenally rapid. For the first year, its rate of increase is 200 per cent. In its second year, the rate falls to 20 per cent. Until the age of 12, the percentage-rate of growth falls off, rising a little at 13, and then sinking until it comes almost to zero somewhere between 20 and 25. This is for boys. For girls the pace is not quite so rapid, but is practically the same. Recently, it has been held and, on the whole, demonstrated by biologists that senescence—that is, the process of growing old—varies in speed at different periods of life. Ordinarily, we are accustomed to think of senescence as applying only to men and women that have passed middle life. But it is now known that the process of senescence and rejuvenescence is a phenomenon applicable to all ages and to all growing organisms. Briefly, senescence is a process whereby the growing organism carries on with it certain products that ultimately clog the machinery and produce death. Through life, in various ways, there are periods of rejuvenescence, when those accumulated products may be thrown off and a person takes, as we say, a new lease of life. It is not possible here to discuss the theory fully; but the important point in it is that the process of senescence—that is, quite literally, the process of growing old and incapable of rejuvenescence—goes on most rapidly in the early years of life. As Mr. Charles Manning Child, of the University of Chicago, in his wonderful research on "Senescence and Rejuvenescence," puts it: "The rate of senescence is highest in youth and lowest in

advanced life." The process of senescence is most rapid when the process of growth is most rapid. As, therefore, growth is most rapid in the earliest period of infancy, the child, during that period, may correctly be said to be racing at full speed into old age. Put otherwise, this means that in the period from conception to the end of the second year the child's organs and faculties become rapidly so fixed, that if his nurture through that period is not sound he will suffer disproportionately for all the rest of his days. Anyone that has watched the birth and nurture of young animals can tell you that if the infant animal does not get a good and correct start he never develops to the full stature or power of an adult. It is the same with human beings. Recently, too, the researches into diet have shown that the young and rapidly growing infant is peculiarly susceptible to the influence of extraordinarily minute quantities of particular food factors. The absence of an infinitesimal amount of a given substance will end in the production of rickets or scurvy. These well-known facts confirm the general conclusion of the biologists that the first months of life are of immense potency in determining the whole future course of individual development. Probably, if we could secure that our expectant mothers shall be properly fed and that they shall be fit to feed their new-born infants, we should not, later in life, have to spend fortunes in preserving our teeth or in procuring substitutes. That is only one very gross illustration of what I mean. But, broadly, the fact that the beginnings of all the child's organs are laid in the first few months after conception, and that the pace of his growth during the first year or two determines his healthiness or unhealthiness for the rest of his life, should alone be enough to justify us in focusing upon the early hours and weeks and months of infancy all the science and skill that we are able to command.

How Scotland has Faced the Problem of the Highlands and Islands.

It is not possible to give details of all our schemes. But the essence of the case is this: over 27 years ago we knew from experience that public health problems, like infectious disease, tuberculosis, typhoid fever, typhus fever, and the many others, could not be sufficiently provided for in the Highlands and Islands without national assistance. When the National Insurance Act of 1911 was passed, the Highlands and Islands, being largely a land of small holders, not of wage-earners, could not provide a sufficient population, even of insured wage-earners, to secure the benefits under the new Statute. It then became obvious to everybody in power, as it had been to the experts for years before, that, as in education so in health, the resources of the Highlands were inadequate for certain primary purposes. When, however, the first Insurance Act was passed, money was made available by Parliament and, on the basis of the Dewar Committee's Report, the Highlands and Islands Board was constituted. This Board was afterwards absorbed into the Scottish Board of Health. Parliament had voted a sum of £42,000 to accumulate year after year. This was before the war. Unfortunately, the difficulties of the war compelled us to stop the accumulation of capital and to expend it in such services as were possible in a time when every difficulty was at its greatest. Doctors by the score had to serve in the Army. We had to provide such substitutes as were available. But the large schemes we had prepared had to remain for a more favourable moment. Since the war, however, the projected developments are progressively appearing. In the year 1927, for example, we spent £70,000—that is, about 350,000 dollars—in the various medical services and nursing services. The primary objective of the whole system is so to adjust the service that the doctor shall be able to attend a patient 25, or 30, or 40 miles distant, or across a difficult sound or loch on the same terms as he would attend the people in his immediate neighbourhood. We aimed at eliminating from the charges the factor of distance. To do this we had to subsidise many doctors for their loss of fees. In other areas, single practice areas, we make up to the doctor a sufficient salary. In very poor areas we guarantee to the doctor a minimum salary that will attract good men and enable them to educate their families and to maintain their own professional education. In these types of service we spend £43,000 a year—that is, about 165,000 dollars. On nursing services we spend £13,300 a year, or over 66,000 dollars. We help with telegraphs and telephones. We subsidise the tuberculosis scheme. But perhaps the most important development of the whole system is the provision of operating surgeons for important localities. For instance, we provide a consultant operating surgeon for the Shetland group of islands, at a salary of about £900 a year, plus special earnings. In the Island of Lewis we similarly maintain an operating surgeon. In that island we have contributed £12,000 (60,000 dollars) to the extension of an admirable cottage hospital, which was opened a few weeks ago by the Under Secretary of State for Scotland. This serves a community of over 30,000 people. In both Lewis and Shetland these hospitals are maintained by voluntary subscriptions. A similar scheme is afoot for the Orkney group of islands. It is certain that in the next few years the scheme for providing operating surgeons will be extended. The young men appointed are carefully selected from the great medical schools. They must have a wide basis of surgical experience. It is gratifying to record that in the two instances up to date the people have come forward in a marvellous way. The operations performed run into hundreds. The medical men of the locality work cordially with the consultant surgeon. In all those island groups, also, there is a county medical officer of health, who sees to the medical examination and treatment of the school-children and the pre-school-children. The consultant surgeon thus becomes an integral part of the general medical and preventive service of the community. It is needless to say that all these medical services are supplemented by trained nurses. In fact, it is worth noting that in the Highlands and Islands Medical Service Act, under which Parliament voted the original grant, the term "medical service" specifically includes nursing service. So far as I know, this is the first time in a British Statute that nursing service has been included as a specific part of medical service. Doctors' houses and nurses' houses can be provided under the scheme and many such houses have been provided. Our aim is, where necessary, to provide at the nurses' house accommodation for one or more sick cases when the distance between her and her work is too great.

The Highlands and Islands medical service system began to operate effectively in 1914. Since that date to the end of 1927; we have spent nearly £660,000 (that is something over 3,000,000 dollars). Of this total, nearly £500,000 (say, 2,500,000 dollars) has been spent on medical service alone. Nursing associations have been subsidised to the extent of £95,000 (say, 475,000 dollars). The full details of all the scheme are in a form that can be easily studied by any person concerned with similar problems. This is what the small Northern Kingdom is doing for a handful of 320,000 people.

The Frontier Nursing Service.

I have been speaking of Scotland, but I have been thinking of Kentucky. With you, as with us, the mother and child demand intensive care. With you, as with us, there is the ever-recurring tragedy of hardship and death. Think what it means when a family loses the mother. The infant is robbed of its nurse; the other children are robbed of their first friend and teacher; the husband is robbed of his companion and confidant. The death of the mother means the maximum of unhappiness to the family she leaves. It is in this light that we must study the facts and in this light the facts are like no

others. To preserve the life of mother and child is the problem before the Frontier Nursing Service. It needs only to be put into words to command the interest and sympathy of every humanist.

This hospital is the radiating centre of the nursing service in these mountains. The maxim of the trained nurse is: "You need me? I am ready." The hospital is a temple of service where the lamp never goes out. There will always be a waking ear listening for the distant cry of a mother in distress. There will always be an officer ready to go forth in the spirit of help and loving kindness. Here, in this temple of humanism, every hour is filled with a clear ideal. The mothers and the fathers know that here they have friends that they can come to and speak to, and live with. Through these mountains and forests, the Frontier Nursing Service will become a gracious presence transfiguring the individual lives. It makes an appeal that no one in the end can resist. The service draws its life from an unfailing fountain of human sympathy and love. That is what inspires the skilled and brave nurses to face the day's duty without misgiving; to feel that the least of duties is a great and holy thing and to live for all their working days in the atmosphere of creative friendship. Here, in their hours with one another and their tales of adventure, they will keep warm the fires of woman's social genius. They will always feel that, here on the frontier outposts, they are living out the true purpose of the Commonwealth—to prepare a worthy and dignified place for every child born to it.

ACT OF DEDICATION.

In all reverence, I dedicate this hospital to the service of this mountain people. The act of dedication will have consequences beyond all imagination. It will evoke responses along the many hundred miles of these mountain frontiers and among the millions of their people. The beacon lighted here to-day will find an answering flame wherever the human hearts are touched with the same divine pity. Far in the future, men and women, generation after generation, will arise to bless the name of the Frontier Nursing Service.

RADIUM TREATMENT OF PRIMARY CARCINOMA OF THE BREAST.*

BY GEOFFREY KEYNES, M.D. CAMB., F.R.C.S. ENG.,

ASSISTANT SURGEON, ST. BARTHOLOMEW'S HOSPITAL; LATE FIRST ASSISTANT, SURGICAL PROFESSORIAL UNIT.

(With Illustrative Plate.)

THE Surgical Professorial Unit at St. Bartholomew's Hospital, under the direction of Prof. G. E. Gask, was entrusted in 1922 with a supply of radium to be used under research conditions for the treatment of carcinoma of the breast. For three years this was used only for the treatment of recurrences which had appeared after operation. The results were instructive if unsatisfactory, for it was shown that a nodule of carcinoma could be made to disappear by local treatment with radium, although it hardly ever prolonged the patient's life, the disease having been already disseminated to more distant parts. This preliminary experience justified the extension of the treatment to primary carcinoma of the breast, and the first patient in this category was treated in August, 1924. Up to the end of June, 1928, 42 patients had been treated.

The technique and the principles of its application were tentative in the beginning, and it is unnecessary to describe in detail the stages through which they passed. The main directions in which they developed have been: (1) to distribute the dose in smaller units; (2) to prolong the time of exposure; (3) to increase the area treated; (4) to extend the routine treatment of the areas of lymphatic drainage until every accessible area was receiving what appeared to be an adequate dose.

* Being the basis of a communication made to the International Cancer Conference on July 19th.

Technique.

The technique used at the present time (July, 1928) is as follows:—

1. The patient is anæsthetised with gas and oxygen. It is seldom necessary to use any additional kind of anæsthetic.

2. The skin of the chest wall, axilla, and most of the neck is thoroughly cleaned with ether.

3. A series of punctured wounds are made in the skin round the site of the carcinoma with a pointed scalpel (Bard Parker blade No. 11). These punctures are about 1·5 cm. apart, and placed so that when the longest needles have been inserted the whole of the carcinoma and a considerable area surrounding it will be evenly illuminated by the radiations. Sometimes the intensity is increased by inserting the needles at two different levels in directions at right angles to one another (see diagram) so that a "grid" of needles is formed. If this greater intensity is likely to cause burning of the skin by reason of the thinness of the patient, or to cause massive sloughing of the growth by reason of its avascularity or of its being already ulcerated, only a single layer of needles is inserted.

4. Similar punctures are made for the insertion of needles into (*a*) the axilla; (*b*) beneath the pectoralis major; (*c*) above the clavicle; (*d*) below the clavicle; (*e*) over the first three or four intercostal spaces.

5. Needles of suitable length are then inserted (*a*) into the axilla with their points converging into the apex, so that the axillary glands will be illuminated by a cone of needles; (*b*) beneath the pectoralis major if there is a considerable space between the primary growth and the axilla; (*c*) deep to the superficial veins of the neck and deep cervical fascia so as to be in contact with the supraclavicular glands; (*d*) deep to the pectoral muscle on the costo-coracoid membrane; (*e*) obliquely into the intercostal spaces so as to be in contact with the parasternal or internal mammary glands.

6. Before the needles are inserted, each has a strand of salmon-gut threaded through the eye and knotted once. These are allowed to protrude from the punctures in the skin, and are knotted in bunches, so that if a needle comes out of place it will remain attached to the others, and will not be lost.

7. The skin is cleaned and the area under treatment is covered with gauze, which is secured in position by broad strips of adhesive rubber strapping. This overlaps the gauze all round, and forms an additional safeguard against the loss of needles. The whole is covered with wool and bandaged.

8. The needles are allowed to remain in position for at least a week, and sometimes for as long as ten days if the tumour is a large one. They are then removed under gas and oxygen anæsthesia. A specimen for microscopic section has been taken at the same time in every one of the present series, since it was necessary to have full proof that the tumour was a carcinoma. This was taken after irradiation rather than before in the belief that implantation of the growth in the incision was less likely to occur.

9. Whenever possible the patients were examined at monthly intervals for the first year. Thereafter the intervals might be lengthened to two or three months. Otherwise a report was obtained from the patient's doctor. The majority of the patients have been consistently kept under my personal observation.

10. A few patients were submitted after about three months to a second treatment with radium, and one patient received three applications.

Details of Apparatus.

For the adequate treatment of primary carcinoma of the breast it is advisable to have available 95 mg. of radium element. For some cases 60 or 70 mg. is enough, but for the larger tumours more is needed. The greater part of the radium, in the form of radium sulphate, should be contained in platinum needles each containing 3 mg. distributed along an active length of 4·8 cm. Experience has shown that needles of this size are convenient and give good results, though it is, of course, not essential that they should have exactly these measurements. These long needles are used for irradiating the tumour and the axillary lymph glands. A few shorter needles containing 2 mg. radium element with an active length of 3·2 cm. are needed for the supra- and infra-clavicular regions and the intercostal spaces. The platinum case of

each needle should have a thickness of about 0·5 mm. The stock of needles should therefore be made up approximately as follows:—

Number.	Ra element content.	Active length.	
25	3 mg.	4·8 cm.	95 mg.
10	2 mg.	3·2 cm.	

A typical distribution of needles is shown in the accompanying diagram.

It is convenient to have three forms of introducer for placing the needles in position. Two of these are large forceps on the principle of the Spencer-Wells

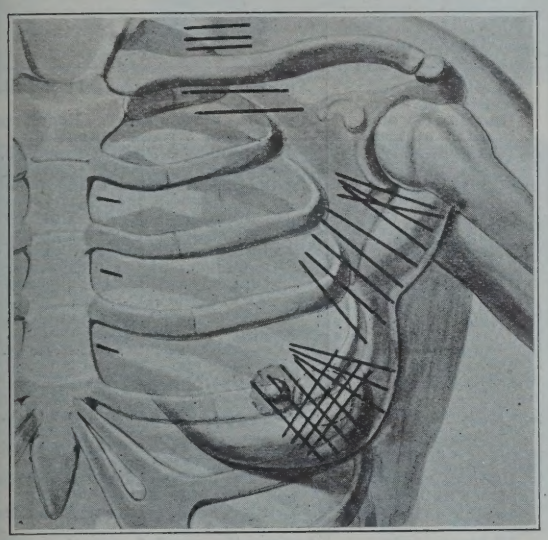


Diagram showing typical distribution of radium needles. (From a drawing by T. L. Poulton.)

hæmostat with grooves cut in the jaws so that the needles can be gripped without damage. One holds the needles in the line of the forceps, the other holds them at right angles. A third introducer may be useful when a needle has to be placed at some distance from the skin, or when the tissues are very tough. This is made on the principle of the trocar and cannula. The trocar is made to project more than the full length of the needle beyond the cannula. When the trocar is withdrawn the needle is pushed by a stile along the cannula and into the track made for it by the trocar.

Patients Treated.

When the investigation was in its initial stages it was clearly right to treat only those patients who seemed to be unsuitable for operation owing either to the position of the growth or to its being adherent to the chest wall. Later, as confidence in the treatment was engendered by the results, patients who formerly would have been submitted to operation were treated with radium, and there has been no reason to regret this. It may be pointed out, however, that on the whole the class of patient treated has been very unfavourable as regards prognosis, and this must be remembered in judging the results.

Results.

(*a*) *Primary Growth.*—The effect of irradiation upon the primary growth usually begins to be plainly seen within a fortnight of the insertion of the needles. The tumour becomes smaller and less fixed and ulceration tends to heal. In a favourable case this shrinkage is progressive until at the end of about three to four months no tumour can be detected. If at the end of four months a tumour is still present and seems to be stationary, a second treatment may be given or occasionally a local excision of the residual mass is performed. In one case a third treatment was given 18 months after the first, which resulted in the final disappearance of the tumour.

(*b*) *Lymphatic Glands.*—In the majority of the patients treated the only enlarged glands that were detected were in the axilla, the rest of the treatment given to lymphatic areas having been prophylactic. The effect on the enlarged glands has been uniformly satisfactory. Usually they have disappeared entirely, even when they had been very large, leaving no trace or only a slight thickening where they had been. So far no recurrences have taken place in any of the lymphatic areas treated prophylactically. The intercostal spaces have been irradiated only in the more recent cases.

Statistics.

Up to the end of June, 1928, 42 patients have been treated. One of these was a male. All were proved by histological examination to have carcinoma of the mammary gland. The operability was as follows: inoperable, 17; operable, 22; doubtful, 3.

Of the inoperable class six died of metastatic growths. None of these lived more than nine months after treatment, though all had shown local improvement and in two the primary growth had entirely disappeared. One (the only male) died of intercurrent disease after having been apparently cured for one year and seven months. One patient reckoned operable, though very unfavourable, died of septicæmia some weeks after local removal of the breast following two radium treatments, the carcinoma having recurred outside the area treated. Of the 34 patients that are alive, two are known to have metastases in bones and four have recurrences. In two the recurrences are in the area treated, in two outside it. Of the 28 patients that remain:—

Apparently cured	13
Tumour almost gone	1
Greatly improved	2
Improving	7
Recent (within 3 months)	5

In the cases of the 13 patients who are "apparently cured," the following times have elapsed since the first treatment:—

One, 4 years; one, 3 years 2 months; one, 2 years 2 months; one, 2 years; one, 1 year 11 months; two, 1 year 5 months; one, 11 months; one, 10 months; two, 9 months; two, 8 months.

The term "apparently cured" may be taken to mean that the primary tumour and axillary glands, if any were detected, have disappeared; in some the tissues seem to have returned to normal, but in others the destruction of the carcinoma has left some scar tissue in its place.

Of the 13 patients in this category there were: inoperable, 6; doubtful, 1; operable, 6. Among the four longest "cures" (two years and upwards), three patients were "inoperable." One of these (two years) had a large growth with a secondary mass filling the axilla. Radium was applied three times, and the successive stages in the disappearance of the tumour are shown in the photographs on the Special Plate. The patient has gained in weight and general health and has been a startling example of the results that may be obtained with radium in an apparently hopeless case. The patient who has been "cured" longest (four years) had a small growth, which was excised locally after treatment with a dose of radium now to be regarded as inadequate. She was the first patient treated and I should anticipate that excision in such a case would not now be necessary, as exemplified by the third patient treated (apparently cured three years and two months).

In order to reduce this statistical survey to its simplest terms, it will be best to eliminate the recent cases, and the single patient (although apparently cured) who died of intercurrent disease. This leaves 26 patients in whom something approaching a *result* may be claimed of not less than eight months' duration. The results are then as follows:—

Apparently cured	13*
Died of metastases	6
Alive, with metastases	2
Alive, with recurrences	2
Died following recurrences	1

* Inoperable or doubtful 7, operable 6.

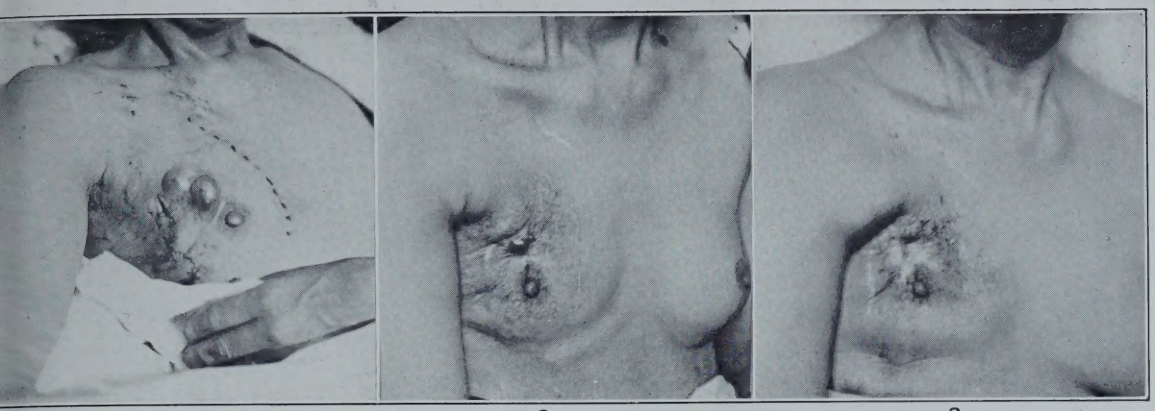
A good result, therefore, has been obtained in half the patients treated, although only seven out of 26 could be regarded as operable. Of the seven operable patients, six are apparently cured. As the proportion of operable cases increases, the results may be expected to improve correspondingly. It is, perhaps, permissible to emphasise the fact that of 17 patients with inoperable or doubtfully operable growths seven are apparently cured. Some of these will no doubt succumb later on to metastatic growths in other parts of the body, but in the meantime the benefit which they have received cannot be questioned.

Histological Evidence.

As already stated, histological evidence of the nature of the growth has been obtained in every case. This was simply in order to prove that carcinoma was present, and only a very small specimen was taken

TABLE GIVING RESULTS OF RADIUM TREATMENT OF PRIMARY CARCINOMA OF THE BREAST.
Cases 10, 24, and 27 are Illustrated on the Special Plate.

No.	Date of (first) treatment.	Type of case.	Axillary gland.	Treatment.	Result.
1	August 1st, 1924.	Ulcerated; scirrhous. Inoperable.	−	Radium (3) and excision of scar.	Apparent cure 3 years 11 months.
2	Jan. 29th, 1925.	Contracting; scirrhous. Inoperable.	−	Radium (2) and excision of scar.	Apparent cure 3 years. Recurrence in scar 3 years 2 months.
3	May 5th, 1925.	"	+	Radium only.	Apparent cure 3 years 2 months.
4	May 1st, 1925.	Massive growth. Inoperable.	−	Radium and removal of breast.	Local improvement. Died of metastases 8 months.
5	June 11th, 1925.	"	+	Radium and deep X rays.	Local improvement. Died of metastases 2 months.
6	July 10th, 1925.	Ulcerated; scirrhous. Inoperable.	+	Radium only.	Disappearance of tumour. Died of metastases 6 months.
7	August 12th, 1925.	Massive growth. Inoperable.	+	Radium only (2).	Local improvement. Died of metastases 9 months.
8	March 23rd, 1926.	Scirrhous. Operable.	−	Radium only.	Apparent cure 1 year 7 months. Died of abdominal tuberculosis.
9	May 18th, 1926.	Small growth. Operable.	−	Radium and excision of scar.	Apparent cure 2 years 2 months.
10	July 13th, 1926.	Massive growth. Inoperable.	++	Radium only (3).	Apparent cure 2 years.
11	August 6th, 1926.	Contracting; scirrhous. Inoperable.	−	Radium only.	Apparent cure 1 year 11 months.
12	Nov. 19th, 1926.	"	+	"	Recurrence beyond area treated 1 year 7 months.
13	Dec. 21st, 1926.	Contracting; scirrhous. Operable.	+	Radium (2) and local excision.	Death from septicæmia after excision 1 year 3 months.
14	Feb. 10th, 1927.	Massive growth. Inoperable.	−	"	Apparently cured 1 year 5 months.
15	Feb. 17th, 1927.	Ulcerated; scirrhous. Operable.	+	Radium only.	Apparently cured 1 year 5 months.
16	April 14th, 1927.	Massive growth. Operable.	+	Radium only (2).	Disappearance of tumour. Recurrence in pectoralis muscle 11 months.
17	May 20th, 1927.	Ulcerated; scirrhous. Inoperable.	+	Radium only.	Died in infirmary 9 months.
18	June 18th, 1927.	Massive growth. Operable.	++	Radium only (2).	Great local improvement. Died with metastases 9 months.
19	August 2nd, 1927.	Contracting; scirrhous. ? operable. Mass in axilla.	++	Radium only.	Apparently cured 11 months.
20	August 9th, 1927.	Scirrhous. Inoperable.	+	Radium only (2).	Recurrence outside area treated. Original tumour disappeared 11 months.
21	Sept. 20th, 1927.	Ulcerated; scirrhous. Operable.	−	Radium and excision of scar.	No recurrence 10 months.
22	Oct. 25th, 1927.	Small growth. Operable.	−	Radium only.	Disappearance of tumour 9 months.
23	Oct. 25th, 1927.	"	−	"	"
24	Nov. 4th, 1927.	Ulcerated; scirrhous. Inoperable.	+	"	Disappearance of tumour 8 months.
25	Nov. 30th, 1927.	Massive growth and mass in axilla. ? operable.	++	"	Not seen again. Has metastases in bones.
26	Dec. 16th, 1927.	Medium growth. Operable.	−	Radium only (2).	Disappearance of tumour 8 months.
27	Dec. 16th, 1927.	Ulcerated; scirrhous. Inoperable.	+	Radium only.	Healed. Tumour almost gone 8 months.
28	Jan. 6th, 1928.	Small growth; large masses in axilla. Inoperable.	+++	"	Tumour gone. Axillary glands much smaller. Metastases in spine 6 months.
29	Feb. 10th, 1928.	Massive growth and skin nodules. Inoperable.	++	X ray treatment, Ovariotomy, radium.	Improving 5 months.
30	Feb. 17th, 1928.	Medium growth. Operable.	−	Radium only.	Disappearance of tumour 5 months.
31	March 30th, 1928.	Massive growth. Operable.	−	"	Improving 4 months.
32	April 18th, 1928.	Medium growth. Operable.	+	"	"
33	April 20th, 1928.	Medium growth. Nipple ulcerating. Operable.	+	"	"
34	April 27th, 1928.	Massive growth. ? operable.	+	"	Improving 3 months.
35	April 27th, 1928.	Massive growth. Operable.	−	"	"
36	May 11th, 1928.	Ulcerated; scirrhous. Operable.	−	"	Improving 2 months.
37	May 18th, 1928.	Small growth. Operable.	+	"	"
38	June 1st, 1928.	Massive growth. Operable.	−	"	Improving 1 month.
39	June 8th, 1928.	"	−	"	"
40	June 8th, 1928.	Adherent growth. ? operable.	−	"	"
41	June 22nd, 1928.	Massive growth; ulcerated. Inoperable.	+	"	"
42	June 22nd, 1928.	Medium growth. Operable.	+	"	"



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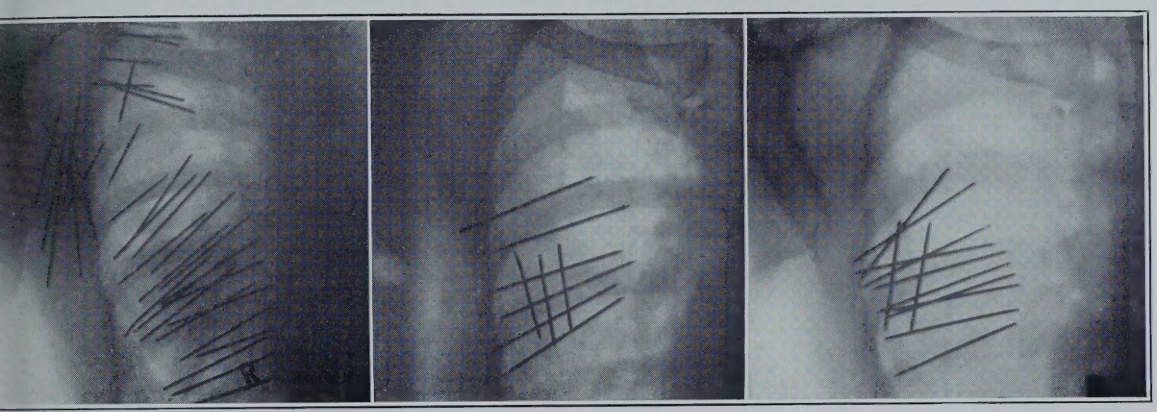

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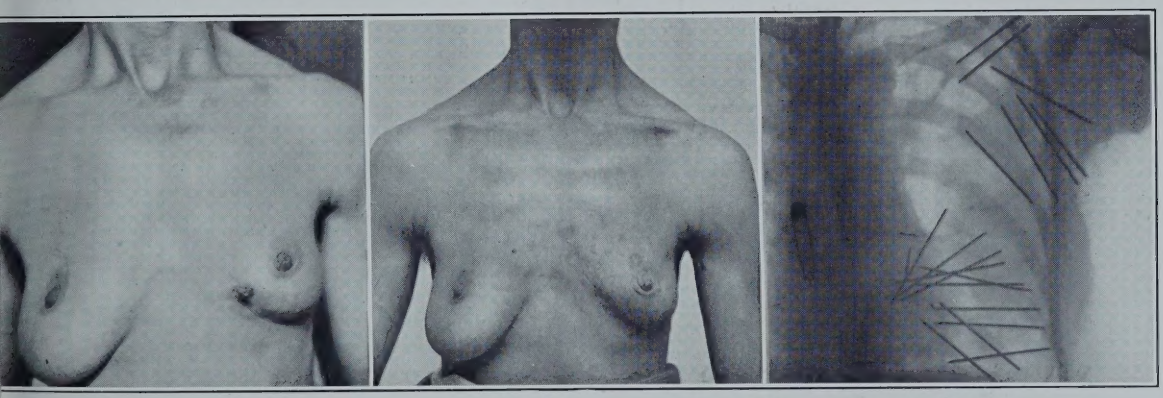

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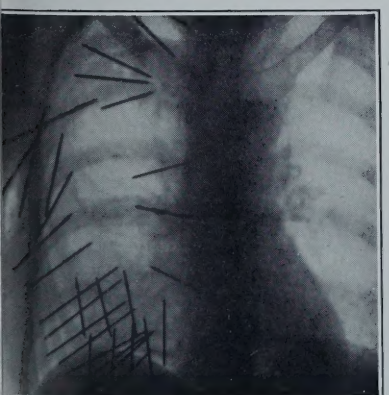
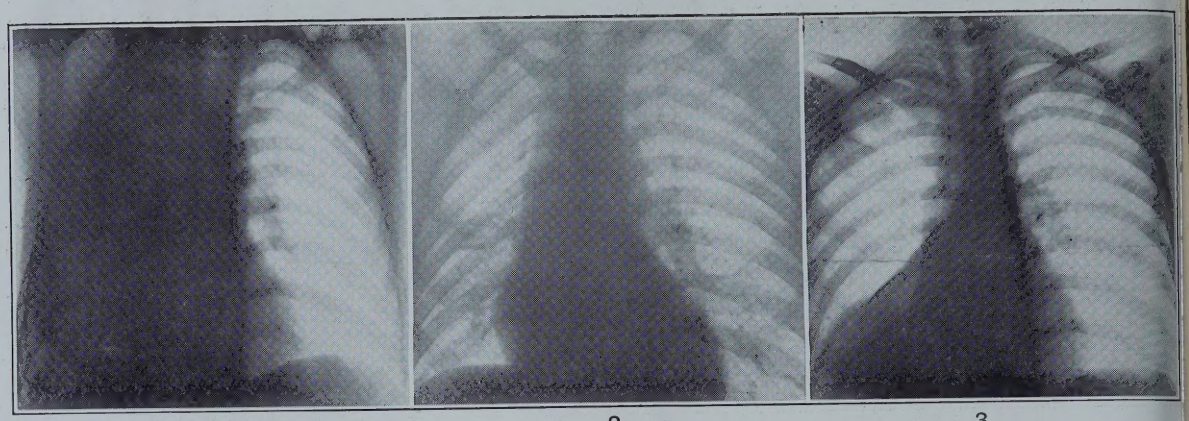


A. Case 10, inoperable carcinoma, apparently cured, in three stages: (1) 23.vii.1926, shortly after first insertion of radium; (2) 2.v.1927, before second insertion; (3) 3.vii.1928, six months after third insertion; (4), (5), (6) showing the three stages in the insertion of radium, on 14.vii.1926, 6.v.1927, and 19.i.1928, respectively.

B. Case 24, scirrhous carcinoma, fixed to chest wall, apparently cured: (1) 3.xi.1927, before treatment; (2) 13.ii.1928, four months after insertion of radium, no tumour remains; (3) 4.xi.1927, showing distribution of radium.

C. Case 27, insertion of radium 16.xii.1927, showing distribution of needles.

MR. GEOFFREY KEYNES: RADIUM TREATMENT OF PRIMARY CARCINOMA OF THE BREAST.



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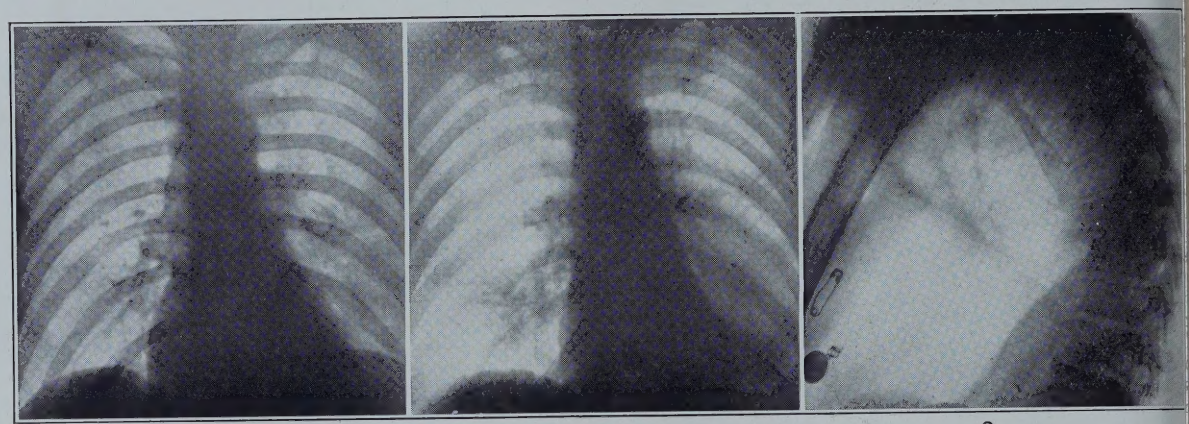

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DR. BOLAND AND DR. SHERET: POST-OPERATIVE MASSIVE COLLAPSE OF THE LUNG.

(References in the text.)

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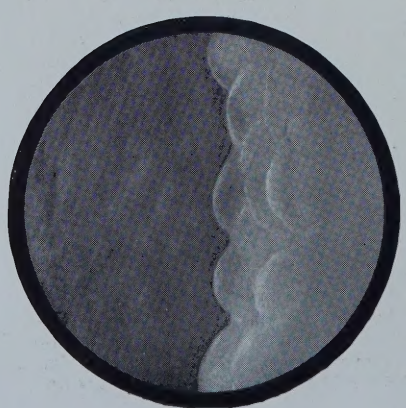

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FIGS. 2 and 3.—Cystoscopic appearance of the mucous membrane of the bladder three months after irradiation of a malignant growth.

FIG. 4.—Ulcerating growth of the whole of the left lateral wall of the bladder three months after treatment with radium. Note the raised edge surrounding the mass of dead growth.

FIG. 5.—Bullous œdema of the left half of the internal meatus of the bladder following radium treatment for carcinoma.

MR. CLIFFORD MORSON: RADIUM TREATMENT OF VESICAL CARCINOMA.

m the most superficial part of the growth. Knowing w much the histological appearance of a carcinoma ries in different parts of the tumour, I have not ought it worth while to make any attempt to relate the results with the morphological type as n in the specimens removed.

f the response to irradiation seemed to be satisfactory, no surgical operation was performed. In a instances excision of the area treated was carried . In the two patients first treated, although great provement had resulted, the area treated was ised in order to obtain information. Both cimens were found still to contain some carcinoma ls, but both had received what I should now regard an inadequate dose. In spite of this, one of the ients is still quite well after the lapse of nearly r years. The other has recurrences. In a patient ated somewhat later in the series (No. 4), a massive wth was excised five and a half months after treatnt of its deep surface with radium. Sections of the diated surface of the growth showed that very few cinoma cells remained in this part, though there was re carcinoma still active at a greater distance from radium. The tissues undoubtedly protect those s which are on that side of the tumour most distant n the radium, and it is not always possible to ose every cell to a lethal dose. This screening ct was interestingly shown in a patient who had assive inoperable growth with discoloured bosses the skin surface (No. 14). After two radium treatnts the bosses had disappeared and the whole our was greatly reduced in size. There was, wever, a residual mass after nine months which ought it was wise to excise. Cross-sections through specimen showed that it consisted almost entirely fibrous connective tissue from which all evidence carcinoma had disappeared, *except* for a few cells mediately under the epidermis. These cells were normal in appearance and perhaps might have appeared later; in any case the excision has proved satisfactory, and the patient is quite well after one r and five months. A similar residual lump ised from another patient, one year and four months er radium treatment, was found to consist of fibrous nective tissue only and no trace of carcinoma ld be discovered.

Local excision has been called for in comparatively patients, and the histological evidence is necesily incomplete. It has, however, served to nonstrate both the partial and complete destruction of a carcinomatous growth by radium.

Advantages of Radium Treatment.

The insertion of radium needles is a trivial operation pared with Halstead's operation, and can usually done under gas and oxygen anæsthesia. The rtality-rate should be nil. In a favourable case an parent cure can be effected without any mutilation atever. The lymphatic drainage can be dealt with re extensively with radium than by dissection, ce it is possible to treat effectually not only the lla, but also the supra- and infra-clavicular regions l the intercostal spaces. In no case hitherto ated has any œdema of the arm followed the plication of radium. Radium can be applied with nefit to all but the largest tumours, and an apparent e can be effected in a considerable proportion of es which are unsuitable for any operation.

Disadvantages of Radium Treatment.

The cost of radium is at present so high that a pital outlay of £1500 is necessary for treating one ient at a time; but the stay in hospital is usually more than ten days, so that at least twice as ny patients can be treated by radium as could be ated by operation with the same hospital accomdation in the course of a year. It seems to be possible to avoid causing in some patients a superial skin burn, particularly in those who are thin. is results in some discomfort for several weeks, t no permanent disability results. Occasionally very vascular tumour has sloughed away leaving an ulcer which is slow to heal. Perhaps further experience with the regulation of the dosage may lead to avoidance of this trouble.

Conclusion.

The published statistics of the end-results of the treatment of carcinoma of the breast by operation have not been very encouraging. One of the most convincing statistical reports of recent years is that compiled by J. F. C. Braine and Grant Massie and published in the *Guy's Hospital Reports* for 1926. Of the 338 cases there traced, 54 per cent. were alive at three years after operation and only 28 per cent. were alive at five years. The average of the figures published by 23 authorities from 1896 to 1926 gives a survival-rate of 41·4 per cent. for five years. If, therefore, a method other than operation is adopted, it will not find itself in competition with any very efficient means of treatment, and the results will be bad indeed if they are worse than those of operation. Furthermore, the Guy's Hospital statistics have shown that "the average period of survival is inversely proportional to the magnitude of the operation." This statement is in a sense fallacious, since it is probably true only of the advanced cases such as are commonly seen in hospital practice; yet it is clear that operation introduces a factor adverse to the patient's interests, and it might be expected that any other treatment which is locally effective will produce better results in the end. Even if the results of alternative treatment were only as good as those of operation, an alternative which rendered removal of the breast unnecessary would obviously be preferred.

I am not aware that any treatment has yet been introduced for which the claim has been made that it is better than operation for the average case of carcinoma of the breast. In the present article I have tried to describe the results of a method of treatment with radium which seems to promise results comparable with, or even better than, those of operation. Many years must elapse before a final opinion can be expressed, but the results are sufficiently remarkable to suggest that their publication should not be any longer delayed.

Several of the patients treated were referred to the surgical unit by other members of the surgical staff at St. Bartholomew's, and to them my acknowledgments are due.

POST-OPERATIVE MASSIVE COLLAPSE.

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(*With Illustrative Plate.*)

THE fact that abdominal operations may be followed by pulmonary complications has been recognised since the dawn of abdominal surgery, but despite steady advances in surgery the only tangible addition to our knowledge of the abnormal processes in the lung has been the recognition, in 1908, by William Pasteur,[1] of massive collapse. This Pasteur described as a condition in which extensive areas of lung tissue, varying in size from a large portion of one lobe to a whole lung, became quite airless, blue and obviously shrunken, and sank immediately in water. The characteristic physical signs were purely mechanical accompaniments of the loss in volume, to make up for which the chest on the affected side became retracted and immobile, and the heart and mediastinum moved towards the affected side. So vehemently did Pasteur insist that massive collapse could only be suspected in the presence of this cardiac displacement that post-operative pulmonary complications have ever since fallen into three main groups.

The first is composed of cases exhibiting the essential signs of massive collapse as described by Pasteur. The second comprises cases which were regarded as post-operative pneumonia, because cardiac displacement could not be demonstrated. The third includes a few easily recognisable complications, notably those of embolic origin.

Our investigations very early showed that post-operative pneumonia is almost a chimera and that the distinction between the first two groups is little better than a shibboleth. In other words, the vast majority of all complications are massive collapses, which may or may not be accompanied by demonstrable cardiac displacement.

We followed the convalescence of 261 patients from abdominal operations of all grades of severity, with reference to the possible occurrence of declared or latent alterations in the lungs. All the cases were nursed in a more or less fully developed Fowler position.

The X Ray Appearance.

Although the physical signs of massive collapse, whether or not accompanied by demonstrable cardiac displacement, are very characteristic, its most striking manifestations are in the radiographic films, particularly when it affects the whole of one lung. (Fig. 1.)[3] The shadow cast by the airless lung is at least as dense as that caused by a thick layer of fluid, and may even obscure the rib outlines. The cardiac and mediastinal shadows, including that of the trachea, are much displaced towards the affected side, the diaphragm is elevated, and the ribs fall together so as to assume a tiled appearance.

When one or other lower lobe is involved alone, the shadow is equally dense and occupies a triangular area which, on the left side, may be almost completely overlapped by the heart. This area always indicates by its size that the affected lower lobe is much diminished in volume and, when cardiac displacement is demonstrable clinically, the degree of migration of the mediastinum and tiling may be as extensive as when the whole lung is collapsed (Fig. 3). More often the evidence of displacement is so slight as to render clinical detection impossible, and quite frequently it is entirely absent (Fig. 5). A lateral view, however (Fig. 6), shows at once that the whole lower lobe is far more shrunken than would be suspected from an antero-posterior view, and that it is completely pushed back into the posterior costo-phrenic angle by the aerated upper lobe. For the diagnosis of massive collapse, therefore, we come to Dr. Twining's[2] suggestion that we should rely on evidence of displacement of the interlobar septum, as seen in the antero-posterior and lateral views, and not on mediastinal displacement.

The first indication of the onset of massive collapse is a mottled appearance in the lung, developing during the first 24 hours after operation (Fig. 4). We have only once watched this go on to a collapse associated with marked mediastinal and cardiac displacement, because the collapse was usually fully established at the time of the first examination, but it has occurred with great frequency in the earliest stages of those cases which do not subsequently show displacement clinically. This mottling nearly always occurs in the lower lobes only, on one or both sides, and appears to be due to areas of lobular collapse, which coalesce to form massive collapse, usually of the whole lower lobe. Nevertheless, it often clears up rapidly; this may happen in one lower lobe, while the other goes on to complete collapse in a few hours. When both lower lobes are collapsed there is usually no cardiac displacement, while if one is completely collapsed and the other merely mottled, the heart is often slightly displaced towards the side of the complete collapse. This is particularly common when the right side is the more affected, since there seems to be a general tendency for displacement to occur more readily towards this side.

When the lung becomes aerated again it sometimes fails to return at once to its normal volume (Fig. 2). Its shrunken condition is partly maintained by the mechanical conditions in the pleura, which are altered by the emphysema in the upper lobe, and partly, by the effects of inflammatory changes, which may show themselves in pleural thickening (Fig. 2), and the persistence of small areas of opacity in the hilum region, presumably due to residual consolidation.

Incidence and Distribution.

The table shows the incidence of pulmonary collapse in our series. Of the six cases which fulfilled Pasteur's description by giving marked clinical evidence of cardiac displacement, one affected the whole right lung and one the whole left lung, the others being confined to the right lower lobe. The number of patients in whom this picture occurred (6 in 226, or 2·3 per cent.) gives a fairly accurate indication of its frequency, since it represents a mean between the 0·6 per cent. and the 0·2 per cent. of Scott and Culter[30] in different institutions and that of Mastic's, Spittler, and McNamee[31] of about 7 per cent. There is a general tendency in this group for the right side to be more frequently affected than the left. There is usually a higher incidence among males than among females, but this is not revealed by our figures. Of the cases which showed no cardiac displacement clinically, 11 were bilateral, 10 involved the left lower lobe, and 9 the right lower lobe. We have never seen the upper lobes affected except when the whole lung has been involved.

The anæsthetic used or its method of administration—in these cases usually ether by the open method or from a Pinson's bomb—do not appear to bear any relationship to the frequency of pulmonary complications and, except that very young children are rarely affected, age does not appear to be a predisposing factor, but we feel certain that they are much more common when the weather conditions are adverse.

Ætiology.

Every mechanism which could probably bring about the deflation of the lungs has been evoked, with minor modifications, by different observers, and the question still remains unsettled. Pasteur, having originally recognised massive collapse in cases of post-diphtheritic paralysis,[3] felt certain that failure of the inspiratory mechanism was the essential cause of the condition, and the observation that after abdominal operation the whole diaphragm might be immobile without any abnormality in the lung influenced him only to the extent of stating his theory as follows:—

> "A stimulus of unknown nature arising in one half of the body arrests the distending action of the corresponding half of the diaphragm to such a pitch that the compressed of the lower lobe on that side take charge, causing it to collapse in a manner already described."

Rose Bradford[4] considered that some reflex was operative and that the retraction of the chest wall was active rather than passive. At the same time he saw obstacles in the way of accepting Pasteur's view and believed that, with the arrest of respiration at extreme expiration, the alveolar air was not sufficiently renewed and was absorbed by the blood stream.

Briscoe,[5] after an exhaustive research into the mechanism of respiration in the erect and supine postures, formulated a theory which differed from Pasteur's only in the supposition that the diaphragm and its synergic and antagonistic muscles were in abeyance because of posture and an inflammatory lesion in the region of the crura. Scrimger,[6] satisfied that respiratory paralysis could not cause massive collapse, considered that some reflex mechanism brought about a spasm of the bronchioles which was followed by absorption of the alveolar air. Scott favoured a similar mechanism but preferred to believe that the reflex acted on the vessels in the bronchiole wall, which became so dilated as to obstruct the lumen. Sante,[8] who also considered that the primary cause was a reflex one, thought that it might act by causing paralysis of the bronchiole wall so that it collapsed, its walls being then held in apposition

secretions. Elliott and Dingley[9] also failed to produce collapse of the lung by complete destruction of the respiratory mechanism, and considered that it came about because of the pure accumulation of secretion in the bronchial tree. This theory has received the support of Jackson and Lee,[10] Hearn and Clerf,[11] and several other observers on purely clinical grounds.

Massive collapse occurs in debilitated children and in people suffering from bronchitis, also after severe injury of the trunk without fracture of the ribs; in portal pyæmia [1]; after thyroidectomy [12]; in cases of pneumonia elsewhere in the lung[1 13]; after gunshot wounds in the chest, abdomen and buttocks. [4 14 15 16]

Table showing Incidence of Pulmonary Collapse.

—	Cases.	Displacement		Percentage.
		With*	Without†	
MALES.				
Operations through upper abdominal paramedian incision ..	58	0	17	29·3
Grid-iron incision	40	3	4	17·5
Hernias and lower abdominal paramedian incisions	51	0	3	6
Total	149	3	24	18·1
FEMALES.				
Upper abdominal paramedian incisions	35	1	5	17·1
Grid-iron incisions	42	2	0	4·7
Hernias and lower abdominal paramedian incisions	28	0	0	0
Nephrectomy and nephrotomy ..	7	0	1	14·3
Total	112	3	6	8
Grand total..	261	6	30	13·7

Cases with displacement conforming to Pasteur's description.
† Cases without demonstrable displacement.

It has been recorded in a case of anterior poliomyelitis[17]; in one of infective meningitis,[18] with pulmonary tuberculosis[19] following high transverse lesions of the spinal cord[5]; and in association with obvious occlusion of the bronchi by tumours, aneurysms, and foreign bodies. It seems, therefore, at the outset that any factor such as the administration of a general anæsthetic, interference with the abdominal contents or parietes, and prolonged rest in one position, which are constantly present in post-operative cases but in the absence of each and all of which massive collapse is known to have occurred, can at most only be important as contributory to some definite cause which is common to all cases.

Although Schroeder and Green[20] reported that massive collapse followed destruction of the phrenic nerves in rabbits, all other attempts to find experimental support for the hypothesis of paralytic origin have yielded absolutely negative results. Crymbles' case (No. 15) in which, after paralysis of all the intercostal muscles and the right side of the diaphragm, the aeration of the lungs was perfectly maintained by the left diaphragm alone adds further confirmation to the experimental evidence. Indeed, all the signs of massive collapse—i.e., retraction of the chest wall and displacement of the mediastinum—testify eloquently to an increase in negative pressure in the affected side which could hardly be brought about by paralysis of the very mechanism which, when it is functioning normally, helps to maintain that pressure.

Similarly, save for an experiment in which Carlson[23] produced contractions and expansion of an extremely rudimentary lung of amphibians by stimulating the intestine and peripheral nerves, there is complete lack of corroboration for the reflex factor suggested in the theories of Bradford, Scott, Scrimger, and Sante.

We ourselves are convinced that the one determining cause is obstruction of the bronchial tree. Our opinion is endorsed by the fact that, long before collapse was recognised as a clinical entity, Mendelsohn,[24] Traube,[25] and Lictheim[26] could always produce collapse of the lung by obstructing the bronchi, and that much more recently their findings have been thoroughly substantiated by Coryllos and Birnbaum. Experimentally it is quite certain that the complete occlusion of a bronchus is always followed by collapse of the lung supplied by that bronchus, because the entrapped air is absorbed by the blood. Nor is there any lack of clinical evidence in support of this theory, for many cases have been reported in which the lung collapsed because of definite obstruction of the bronchi by the foreign body, tuberculous mass, or neoplasm. In post-operative cases Jackson and Lee, Hearn and Clerf, and Harrington[27] have been able to watch the very rapid re-expansion of the lung which followed bronchoscopic removal of thick secretions.

Predisposing Causes in Post-operative Cases.

First among these is the hypersecretion caused by the administration of a general anæsthetic, or the hypersecretion of the pulmonary or cardiac condition which contra-indicated an anæsthetic. This hypersecretion is more marked in males than in females, possibly because the respiratory passages of the former are in a constant state of mild irritation from smoking. This fact may play some part in the relatively high incidence of complications in men. Secondly, the position in which abdominal patients are usually nursed tends to the gravitation of these secretions into the bronchi of the lower lobes, which are alone affected by massive collapse except when one whole lung is involved. The third predisposing cause is interference with the expulsive mechanism either by voluntary suppression or by the excessive use of morphia. In either case the cough reflex, which has been aptly called by Jackson "the watch dog of the lungs," ceases to be excited and secretions accumulate. An incision in the upper part of the abdomen undoubtedly causes more voluntary suppression than one lower down, and this probably accounts for the high incidence of complications after upper incisions. The fact that women are costal rather than abdominal breathers and probably use the costal musculature in expulsion may be a still further explanation of the smaller incidence in the female.

An important question is how much deflation can be brought about by posture and by voluntary inhibition of the respiratory movements. Briscoe, and more recently his pupil,[29] Livingstone, have demonstrated that the supine position is associated with a very marked reduction in the vital capacity of the chest, an alteration which, of course, occurs in all patients recovering from operations.

When massive collapse follows a grid-iron incision or one in the lower part of the abdomen, the initial obstruction not infrequently affects the larger bronchi and, because of the small amount of deflation already present, there is a considerable amount of volume to be made up when the air is absorbed, so that the cardiac displacement tends to be extreme. With upper abdominal incisions obstructions of the larger bronchi occur with equal frequency, but because of the excessive deflation which accompanies these incisions the minute bronchioles very readily become obstructed. This causes a diffuse lobular collapse which gives to the X ray picture of the affected lobe a mottled appearance. It is possible that a lobar collapse would result from the coalescence of these lobular areas, but this is more probably due to a gradual filling of the lower lobe bronchi with the secretions which accumulate when there is no longer a head of air to expel them nor tidal air to evaporate them. Once the lower lobe is completely collapsed the upper lobe can fill the diminished pleural space without causing any displacement of the mediastinum or heart.

This theory depends to a certain extent on the results of certain attempts which we have made at prophylactic treatment, to which we shall refer to later.

Clinical Features.

The symptoms associated with the onset of massive collapse vary very widely, and cases may be described according to their severity as fulminant, moderate, or latent.

In *fulminant* or acute cases the onset is accompanied by a "collapse attack" which, although rare, is striking enough to deserve a description. A patient who may seem fairly well suddenly becomes so cyanosed, distressed, and dyspnœic that death appears imminent. At the same time his temperature and pulse-rate become very high and diaphoresis is generally profuse. At the zenith of the attack the patient adopts a very characteristic attitude, curving his body and inclining his head towards the affected side. A collapse attack does not necessarily indicate that an unusually large area is involved. We have seen it both with and without mediastinal displacement, and the subsequent course does not differ in any way from that of others.

In *moderate* cases the dyspnœa and distress are very variable but always fall far short of the urgency of a collapse attack. The lips are usually cyanosed, the temperature about 100° F., and the pulse-rate about 120. Diaphoresis is usually present.

The *latent* cases, however, show no symptoms at all, and the explanation of a temperature of 100° F. and a pulse-rate of 120 associated with slight cyanosis must always be sought at the bases of the lung.

In his review of the cases in the literature of 1927, Scott found that in 50 per cent. the onset occurred within 24 hours of operation, in 20 per cent. after 48 hours, and the remaining 30 per cent. in the intervening period. It is fairly certain, however, that in the cases described as coming on after the lapse of 48 hours it is the recognition and not the collapse that is delayed. When the access of air to the alveolar tissue of the lung is interrupted the carbon dioxide in the entrapped air is absorbed very rapidly, and is immediately followed by the oxygen. The nitrogen, however, is not fully removed for 24 hours, so that when the lung is completely airless the obstruction has already been in existence for many hours, and in some cases it seems to become established even before the effects of the anæsthetic have completely worn off.

If a typical case of massive collapse of the lungs—say that of the right lower lobe with moderate symptoms—is seen 14 hours after operation, the temperature and pulse-rate are rising, the respirations are shallow and difficult but only slightly increased in rate, and the skin is moist. The patient may want to cough, but refrains as much as possible because of the pain. At this stage the lower part of the chest is moving very little, if at all, with respiration and the immobility is especially well marked on the right side. The heart is either normally placed or displaced to the right, or else no estimate can be formed of its position. The only physical signs in front are coarse râles heard everywhere with inspiration, but the percussion note in the back, although not absolutely dull, has lost its resonance to a degree greater than that caused by mere postural deflation. The breath sounds can be heard only on deep inspiration, and the vocal fremitus and resonance are much diminished. Moist sounds are conspicuous all over the lungs and X ray examination reveals the mottled appearance of lobular collapse in the affected lobe. Some 20 hours later the acute symptoms have almost completely subsided, but the cyanosis remains and the temperature and pulse are nearing their maximum, which, unless the condition has completely resolved, they attain about 48 hours after the operation. At this time all moist sounds have disappeared from the normal area, but the retraction, immobility, and cardiac displacement are much more marked, especially when the patient lies flat on his back. The physical signs of fully developed massive collapse are present at the right base posteriorly over a small triangle which is bounded roughly by a line passing from the sixth dorsal spine to the point where the posterior axillary fold intersects the base line.

These physical signs present an ensemble which is well expressed in the term "dead lung." The percussion note is as dull as that caused by fluid and has a very similar feel, the breath sounds are entirely absent or are heard only on the deepest inspiration, and the vocal fremitus and resonance are greatly diminished. On the fourth or fifth day the temperature and pulse-rate may return to normal, and between the third and sixth days the cough, which gradually becomes more confident, produces large quantities of thick, green, muco-purulent sputum which contains many polymorphonuclear leucocytes and presents a very variable flora. Pneumococci, *Micrococcus catarrhalis*, and *Bacillus influenzæ* were the most constant in our series. The physical signs, however, are unaltered until some time after the cough has expelled the obstructing secretions, and then they take on protean characters. Occasionally the percussion note becomes resonant at once and the breath sounds vesicular but accompanied by showers of inspiratory crepitation; loud tubular breath sounds may appear with increased vocal fremitus, bronchophony and pectoriloquy, and any intermediate condition may be discovered. Not uncommonly the physical signs have a patchy distribution, presenting one set of characteristics in one place and another elsewhere. These signs may persist for many days after the obstruction is removed and the patient appears perfectly well, but the rapidity with which the lung becomes reaerated clinically and radiologically bears a very definite relationship to the duration of the obstruction as judged by the physical signs. The obstruction is usually removed before the fifth day, after which the signs of massive collapse give place to those of its complications.

Cases 1 and 2 of our series show the most rapid recovery possible: reinflation after early removal of the obstruction brought about by turning the patient very violently on to his affected side. The sputum of Case 2 gave at one stage definite evidence of the breaking-down of the lung parenchyma, and we believe that if postural drainage had not been persistently maintained this case might have had a much less favourable issue. The majority of cases, however, ran an intermediate course.

Complications and Mortality.

Collapse, although itself of interest rather than import, may become a matter of gravity because of the complications to which the collapsed lung is liable. Experimentally these inflammatory complications have been studied in dogs by Coryllos and Birnbaum. Their general conclusion was that some degree of inflammatory change seemed inevitable if the obstruction remained unrelieved for 72 hours. After this time the most frequent complication was diffuse suppuration—a real purulent pulmonitis which evidently originated from the bronchi. Less often they found a hæmorrhagic pulmonitis resembling that of influenza, or a typical broncho-pneumonia but never lobar pneumonia. It seems likely that the violent infective changes in dogs are related to the presence of *Bacillus coli* in the mouth, but in man the muco-purulent sputum which is nearly always present in the later stages suggests that some infection does occur, and the physical signs indicate changes in the lung varying from mere congestion to broncho-pneumonia. Scott, Lee, Pasteur, Elwyn, and Hirschbroeck [33] all report cases in which the secondary broncho-pneumonic condition was accompanied by severe toxæmia and ended fatally, but this is rare. A thick fibrinous exudate, however, is not uncommonly found over the collapsed area post mortem. This may be secondary to the inflammatory conditions, but in the two patients in whom it came under our notice it originated from the rupture of a subpleural abscess which was in communication with the bronchial tree.

Massive collapse and its complications are probably not attended with any estimable mortality. The cases in which the resulting broncho-pneumonia proved fatal form a very small percentage, and

lthough four of the cases in our series came to utopsy there was always some cause of death other han the pulmonary condition.

Pathology.

It seems that a true uncomplicated case has never et come to autopsy. Microscopically the collapsed be is usually found as a shrunken mass crowded up gainst the vertebral column by the emphysematous be which is not affected. It is purple-red, firm, nd quite airless, so that it sinks in water, and the naffected lungs are usually emphysematous. In the eas where the inflammatory changes are not so vere as to overshadow everything else, the alveolar aces are greatly diminished in size and the cells, though their outline remains clear, become crowded gether. Because of this approximation of the veolar walls the lung assumes such an extremely scular appearance that Jackson and Lee speak of n angiomatous condition. The most common dication of the inflammatory changes is the filling the smaller bronchi by fibro-purulent plugs and ie presence around them of areas which are indisnguishable from broncho-pneumonia. Differences cur in the extent of these changes, but no other flammatory condition is described.

Four of the patients in our series died and were bmitted to post-mortem examination; none of iem had shown cardiac displacement before death. In the first death was due to a large empyema on the le of the massive collapse, originating from the retroritoneal spread of an appendix abscess. The second ed, seven days after the establishment of massive collapse, om streptococcal peritonitis; the right lower lobe was runken, firm, and airless with pus in all the small bronchi. the third death from peritonitis occurred seven weeks ter operation; during most of this time the physical gns had suggested an effusion at the left base. The wer lobe on the left side and the lower part of the upper be were covered with a thick fibrinous exudate, under hich the lower lobe was shrunken and airless to a degree r in excess of that which could be caused by mechanical essure. This exudate was caused by perforation of the llapsed lung over an abscess cavity about as large as a alnut in the lower part; the cavity was proved by the jection of lipiodol to be in communication with the terinal bronchus. The fourth patient died, six weeks after eration, from infective endocarditis which apparently llowed an infection of the throat during convalescence. acroscopically the appearances were almost identical th those in the previous case, the lower lobe on the left le being contracted to less than one half of the original ze and covered with a layer of fibrin resulting from the pture of a bronchiectatic abscess three days before death. The sections in these cases had very little in common. the second case, although the collapse had been present r only seven days, and in the third, where it had persisted r seven weeks, the inflammatory changes were well marked d, but for the macroscopic evidence of collapse, it would ve been difficult to differentiate the condition from oncho-pneumonia. There were, however, areas in which e angiomatous condition described by Jackson and Lee as vividly portrayed, and others in which the alveoli were cupied by fibrinous exudate which contained practically cells and presented an appearance strikingly similar to e descriptions given by Corylios and Birnbaum of one type pulmonary complications of bronchial obstruction. The ctions of the fourth case, although the collapse had perited for six weeks, showed very much less inflammatory action, apart from the ruptured bronchiectatic abscess. here were a few patches resembling broncho-pneumonia d others in which there was a fibrinous exudate only, but e general appearances were those of simple massive llapse with approximation of the alveolar walls and latation of the capillaries.

It seems, therefore, that, although the microscopic ppearance of uncomplicated massive collapse is irly characteristic, it may be completely overadowed by secondary inflammatory changes, and at in these circumstances due attention must be ven to the macroscopic shrinkage and to the absote airlessness of the affected lung.

Diagnosis.

Pneumonia may be justly suspected in most cases hen bronchial breathing and pectoriloquy are esent, but when these signs occur in a patient who shows nothing else to suggest an inflammatory lesion of the lungs, the terminal stages of massive collapse must be considered. There may be little cough and expectoration, no more marked acceleration of the pulse and respiration-rate than is comparable with the general condition of the patient, and no fever. Further evidence against pneumonia is provided by the absence of any alteration in the physical signs from day to day, the often complete lack of moist sounds, and the presence of a large area of physical signs contrasting strongly with the complete absence of toxicity. Pneumonia is a rare complication of abdominal operations. We have only seen one case of hilum pneumonia among our patients, and the gravity of the illness showed at once that the complication was more serious than massive collapse. Evidence is rapidly accumulating to support the opinion, originally expressed by Pasteur, that when after abdominal operation physical signs at the bases suggest pneumonia, the chances are all in favour of massive collapse.

Treatment.

The treatment of these complications may be symptomatic or curative. Symptomatic treatment is only necessary in the grave collapse attacks, when probably all that is required is a small dose of morphia. Farris and others, believing that the chief cause of distress in these cases is cardiac and mediastinal displacement, have advised the induction of an artificial pneumothorax on the affected side. As these attacks are never fatal and the baneful symptoms usually subside in 24 hours, this must be unnecessary and harmful.

The immediate object of all treatment must be the removal of the obstructing plug from the bronchus. Jackson and Lee, Hearn and Clerf, Tucker[34] and Harrington, have all accomplished this successfully by bronchoscopy and have recommended it for all cases without delay. Even in the hands of experts bronchoscopy without anæsthesia causes a degree of shock and exhaustion which cannot be contemplated without misgiving, while the administration of another anæsthetic for bronchoscopy is not rational.

Sante, although not accepting the obstruction theory of massive collapse, has shown that re-expansion can be brought about by turning the patient rapidly on to his unaffected side and making him cough. This method undoubtedly acts by dislodging the obstructing mucus, and in our experience has always been satisfactory. It is, however, necessarily somewhat violent, and does not always seem justifiable in the earliest stages, when it is most efflcacious. Its usefulness is limited to those cases in which the obstruction is in the larger tubes.

We are convinced that the treatment of massive collapse should be primarily prophylactic and should consist essentially of postural drainage of the bronchial tree. We have treated by this method 47 male patients, who were not selected in any way except that no emergency condition was included. All pillows were removed and the foot of the bed was raised 20 inches above the head for 24 hours after operation. None of these patients had massive collapse while this position was maintained. At the end of 24 hours radiograms always showed that the lower lobes were excellently aerated as compared with the apices, but at varying intervals after return to the horizontal; several of the patients developed mottling of the lower lobe, which in two instances went on to massive collapse without cardiac displacement. We are aware that this position is extremely unorthodox, but we have never seen anything but good follow its employment. Occasionally there is headache, but the effects on the cardiac and respiratory systems, as indicated by the pulse-rate and respirations, are always beneficial. The method certainly reduced the incidence of massive collapse and might have reduced it still further if the posture had been maintained longer.

When postural treatment cannot be attempted morphia should be avoided as far as possible, as its excessive use certainly increases the liability of

massive collapse. Attempts should be made to increase the aeration of the lungs by forced breathing or the administration of carbon dioxide to produce hyperpnœa, although we are somewhat sceptical of the value of this latter treatment.

Conclusions and Summary.

1. 13·7 per cent. of all abdominal operations are followed by pulmonary complications, males being more affected than females, and upper abdominal operations more than lower.

2. Pneumonia occurring after abdominal operation is extremely rare and all these complications consist of massive collapse of the lungs, which may or may not be accompanied by the cardiac displacement on which Pasteur laid such stress.

3. Massive collapse is due to obstruction of the lumen of the bronchi, followed by absorption of the contained air by the blood stream. This obstruction most often affects the larger tubes, but when the incision has been in the upper abdomen the deflation of the lower lobe is so great that the bronchioles may become primarily obstructed.

4. About one out of every six of these cases exhibits cardiac displacement, depending on the degree of deflation of the lung before the obstruction occurred.

5. The predisposing causes are the catarrh which follows an anæsthetic, the position in which the patients are nursed, and the inhibition of the cough reflex by pain or the excessive use of morphia.

6. The clinical features, complications, pathology and diagnosis of massive collapse are described.

7. Certain measures of treatment are advised, with special reference to postural drainage.

We are indebted to the honorary staff of the Ancoats Hospital whose cases form the material of this investigation; and to Mr. P. G. McEvedy, F.R.C.S., Dr. E. W. Twining, and Dr. A. E. Barclay for much helpful advice and criticism of our efforts. For the bacteriological and pathological investigations our thanks are due to Dr. Mary Leslie Smith.

[*Note.*—A complete table of the cases investigated has been prepared and may be inspected on application to the authors.

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OBSERVATIONS ON THE RADIUM TREATMENT OF VESICAL CARCINOMA.*

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(*With Illustrative Plate.*)

FIFTEEN years ago the study of radium therap in this country was in its infancy, the medical pro fession, with few exceptions, having no knowledg of the results which had already been obtained o the Continent. Even America, so responsive to a that is new in therapeutics, had likewise lagge behind. To N. S. Finzi must be given the credi of being the first in Great Britain to use radium in an large quantity for the treatment of malignant diseas The lack of interest shown by the hospital authoritie was remarkable, and it was not until the news of th disappearance of tumours, when exposed to radiu irradiation, had filtered through to the general publi that they were stirred from their lethargy. The came the reaction and the demand for the rare an expensive element became an urgent problem. The followed the usual attempts of imposters to sell met tubes which were stated to contain radium. I reca two instances, one in which a tube supposed t contain 20 mg. of the salt proved to be empty, an the other, in which the brother of a medical ma suffering from carcinoma of the stomach, had bee persuaded to take, by the mouth, radium in solutio at the price of 10*s.* 6*d.* per bottle. How many bottl he purchased I know not, but the one that came int my possession contained only a coloured fluid.

My acquaintance, in 1913, with certain worke in Paris, such as Degrais, Domenici, and Becquere caused me to make a special study of the chang which occur in malignant tumours on exposure t radium. The findings from this investigation we incorporated in a paper read before the Section Pathology of the Royal Society of Medicine in th spring of 1914. They entirely confirmed the work Domenici and may be summarised as follows:—

1. The greatest effect upon a tumour when exposed irradiation is produced by burying the tube containing radiu in its substance.

2. Unless the malignant cell is destroyed at the fir exposure its power of resistance is increased with ea succeeding one.

3. Different types of malignant cells differ in their degre of sensibility to irradiation.

4. The nucleus is the first part of the malignant cell show changes.

5. The action of radium on the connective tissue ce is similar to the attempt of nature to arrest the growth cancer through overgrowth of fibrous tissue.

The most important advance since this date our knowledge of the changes in cells, both norm and malignant, is that made by Dr. Ronald Car with his cinematograph. He has demonstrated th the fibroblast is not destroyed by a comparative large dose of radium, whereas certain other norm cells are. This is a very valuable observation wh we consider the relationship of these normal cells the inhibition of the growth of malignant disease the human body. The clinician well knows t atrophic scirrhus, and the pathologist is well awa why it is atrophic. The overgrowth of fibrous tiss in and around the tumour has terminated once a for all the activities of these malignant cells.

A. H. Drew, of the Imperial Cancer Resear Fund, carried out a number of experiments upon t growth of cells outside the body, and demonstrat that a malignant tumour will take on disorde growth in the absence of fibroblasts. If the latt cells be added to the culture of carcinomatous tissu the spread of the mass is immediately restraine In other words, the fibroblast is the constable of t cancer cell. The data thus collected must have

* Being a paper read before the Section of Urology of t Royal Society of Medicine, May 24th, 1928.

nportant bearing on our endeavours to eradicate ncer with the aid of radium. Even though the alignant mass cannot be caused to disappear—ie ideal at which all of us aim—we know now that is possible to reduce it to impotence by bringing ie fibroblast to our aid. Radium not only fails to ave a lethal effect on this connective tissue cell but, nder certain conditions, seems to stimulate its productive powers.

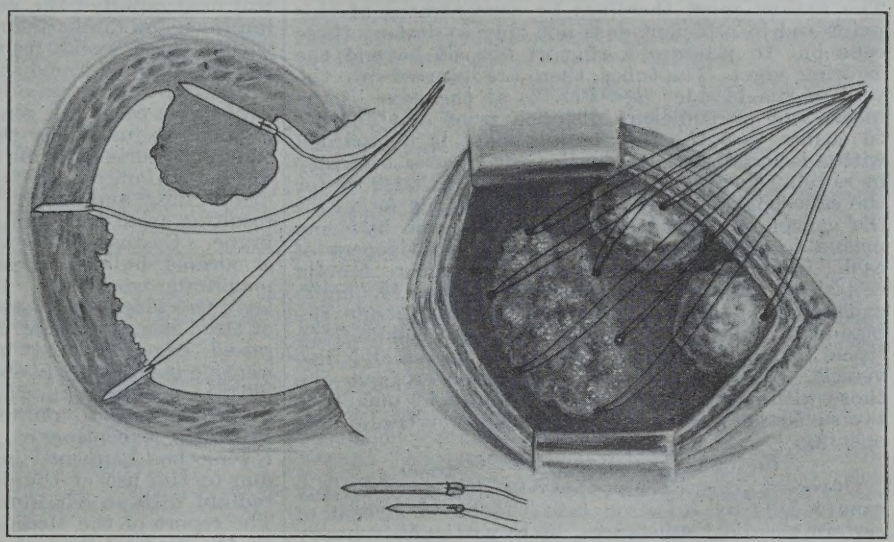
It is with these facts before me that I have aborated a technique for the radium treatment vesical carcinoma. To place one or more tubes a haphazard way into a portion of a bladder owth, irrespective of its anatomical position and s degree of activity, is a common mistake which has ought discredit on the value of radium as a thera-utic agent. Its application cannot be carried out y any rule of thumb.

he growth must be care-lly defined, not only om within the bladder it also from without. he relationship of ad-cent structures, such as ie ureter, rectum, and rge blood-vessels, should noted and, finally, an tempt may have to be ade to sweep away that ost serious of all cancer mplications — sepsis — fore treatment is com-enced. Care has to be ken that the ureter is t constricted by the rergrowth of fibrous ssue resulting from ex-ssive irradiation in its cinity. The same applies the iliac vessels, in hich also, on account of ie sensitiveness of the ning endothelium, rombosis is a possible mplication. I have seen ath take place three ays after the application a tube containing 92 mg. within 5 mm. of the inferior vena cava. Thrombosis d extended along a considerable part of this vessel.

Operative Technique.

Access to the tumour is obtained either through ie urethra or by a suprapubic cystotomy. For ie transurethral application of radium an operating stoscope is required to allow of the accurate insertion the container into the substance of the growth. he cystoscope is then withdrawn and the radium, tached by a holder, is left in position for as long as ie surgeon considers necessary. Obviously treat-ent with the aid of the cystoscope has its limitations, though some authorities insist that access through ie urethra is the route of choice. The treatment of ny bladder disease with the help of the cystoscope quires not only a well-developed visual sense, t also plenty of common sense. Is it conceivable at even the expert cystoscopist can determine curately the extent of a cancer? When hæmorrhage infection is severe, he will get but a glimpse of ie tumour, and, moreover, the size of a tumour as en on the mucous surface of the bladder is no guide its depth and the width of invasion of the muscle yers. The only advantages of transurethral appli-tion are that the patient requires no anæsthetic and incision through the bladder wall. As already ated, it is essential to define accurately the limits the growth, and this can only be done by a supra-bic cystotomy. Under anæsthesia, either general regional, a catheter is passed by the assistant d the bladder is washed out with an antiseptic id—it is my custom to use 1 in 8000 oxycyanide mercury—and then distended. The catheter is withdrawn and the urethra compressed by a penile clamp. With the patient in the Trendelenburg position, the bladder wall is exposed, emptied of its fluid contents by trochar and cannula, incised, and retractors inserted. This allows of a thorough inspection by sight and touch of the mucous surface of the tumour. It is important to note whether the growth is of the ulcerative type or that known as the papillary carcinoma, for the method of application of the radium tubes is different in the two cases. The retractors must now be withdrawn and the fingers of one hand passed between the outside of the bladder wall and the bony pelvis, the fingers of the other hand being in contact with the lesion on its mucous surface. Such bimanual palpation will indicate the exact position of the tumour in relation to ureter, rectum, iliac vessels, and obturator nerve,

FIG. 1.



Sketches to illustrate the methods of inserting radium tubes in (*a*) papillary carcinoma; (*b*) ulcerative variety of carcinoma.

also the extent of infiltration of the vesical musculature and the pelvic cellular tissue. Having determined thus the precise anatomy of the cancer and its clinical variety, careful consideration must be given to the position of insertion of each tube of radium.

Before discussing this part of the technique it is necessary to refer to the quantity of radium and the containers which have been placed at the disposal of the staff of St. Peter's Hospital by the British Empire Cancer Campaign. The total amount of radium is 200 mg. This is put up in platinum tubes, each 0·5 mm. thick, and varying in size according to the contents. There are ten tubes containing 10 mg., one tube of 50 mg., and two tubes of 25 mg. All the alpha rays, and the large majority of the beta, are cut off by the 0·5 mm. of platinum, and for all practical purposes we use nothing but gamma radiation. The radium is kept in a safe, each tube resting in a slot drilled in a mass of lead. One of the disadvantages in the use of radium in clinical research is the inability to alter the distribution of the element in the containers without considerable expense. There are times when one desires to use tubes, say, containing 5 mg. each or even less. To make such an alteration may cost £60 or £70.

Insertion of Radium Tubes in Bladder Carcinoma.

The papillary carcinoma, the cauliflower type of growth, has a pedicle which may be thick or thin, and which consists of malignant cells and vessels going to supply the main mass with blood. In such a case, insert the tubes—the amount depending on the size of the tumour—right through the pedicle, as shown in Fig. 1. The tube is left in position

for 24 hours, thus ensuring destruction of the main blood-vessels and setting up an extensive fibrosis in the wall of the bladder adjacent to the tube. The latter is pushed into position by means of a special holder. The free end is threaded with silkworm-gut and the latter brought out of the bladder through the suprapubic opening and stitched to the skin. The anterior bladder wall is sewn up, except for a small opening to admit a drain and allow the silkworm-gut and radium tube to be removed without difficulty at the end of 24 hours. The drain is left in for another 24 hours.

For the ulcerative type of carcinoma the technique is modified in two respects. The centre of the tumour consists of old cells, some of which are undergoing degeneration. It is unnecessary to attack these cells, for they are suffering from senility and are therefore harmless. The cells at the margin of the growth, on the other hand, are young and in active division. The radium must therefore be concentrated at this point and in sufficient dose not only to destroy these cells but to produce a ring of fibrosis beyond the growing edge. The tubes, then, are inserted into the wall of the bladder (see Fig. 2) at the edge of the ulcer, and at sufficient distance from one another to ensure that the intervening space is bombarded with a lethal dose. Herein lies our greatest difficulty in radium therapy. That which is a lethal dose for the cancer of one patient is not necessarily lethal for the cancer of another. Until we are able by some means to determine the degree of sensitiveness of each individual's cells treatment must remain empirical. The further modification in technique consists in attacking the tumour from outside the bladder. Tubes must be buried in the cellulo-fatty tissue which is situated around the ureter and iliac vessels. They are threaded with silkworm-gut like those within the bladder, and are brought out on to the surface of the skin through the same suprapubic opening.

Radium Combined with Fixatives.

Of recent years attempts have been made to destroy cancer cells by injection into the blood stream of certain chemical substances, more particularly heavy metals in colloidal solution, colloidal selenium, and colloidal lead. So toxic, however, are these solutions that, with experience of them, it becomes increasingly difficult to believe that, to use a racing expression, they will "stay the course." On the other hand, it is conceivable that if used as activators in conjunction with radium—in other words, for the purpose of giving off secondary radiations—they may play an important part in a sustained attack upon a malignant tumour. Mottram, of the Radium Institute, has already published the results of experiments conducted with lead on these lines. If a substance is used which is fixed in the malignant cell and which, unlike lead, is non-toxic, our chances of success are improved. I believe it was Wassermann who first demonstrated that the coal-tar product eosin could become fixed in a carcinoma cell. A short time ago I was much impressed with the results of treatment of a case of carcinoma of the male breast by the injection of sodium fluorescin, followed by an X ray exposure. The investigator was Dr. Monckton Copeman. Fluorescin is a derivative of eosin, is non-toxic, is fixed in the carcinoma cell, and will give off secondary radiations. Profiting by the experience of Dr. Copeman, I injected a malignant growth of the bladder with a 2 per cent. solution of sodium fluorescin and at the same time inserted a number of tubes of radium. The result has been encouraging. It is only one case, and is therefore, from a scientific standpoint, of little importance unless the experiments are repeated over and over again.

Prognosis.

It is a striking fact, confirmed by numerous observers, that bad results are to be expected from radium irradiation where sepsis has intervened upon a malignant growth. I know of no exception to this rule. It is worse than useless in the case of vesical carcinoma. Every effort must be made wit the aid of lavage to reduce the infection to a minimum In a foul-smelling cystitis there is no better disin fectant than a weak solution of sanitas, ʒi. to th pint. Prognosis is far from hopeful, even when som success attends the attempts to eradicate sepsis.

What, then, can be regarded as a favourabl factor, apart from the size of the tumour and th type of cell? It is hæmorrhage. Patients utterl exhausted from excessive bleeding and in imminen danger of losing their lives from this complicatio alone may be restored to a state of health whic allows a breathing space for further efforts to contr the disease. In severely bleeding growths, if th dosage and technique advocated in this paper b adopted—namely, a large quantity of radium wit a short exposure—hæmorrhage will cease withi 24 hours of the commencement of irradiation and i some cases within four hours; the suprapubic woun will heal rapidly; the general condition will steadil improve, and discharge from hospital may be expecte within three weeks from the onset of treatment.

This may be termed the immediate result of radiu irradiation. The remote results are as follows. I favourable cases the general condition of the patien is good, as judged by the increase in weight. Eve though the urine may be quite clear, there is frequenc of micturition, due to radium reaction in the mucou membrane, and slight discomfort on defæcatio resulting from irritation of the rectal mucous mem brane. Cystoscopy shows, at the end of three month a curious bullous œdema of the area of mucou membrane irradiated. In other cases, more particu larly the ulcerating variety and when the tumour of large size, a mass of dead growth surrounded by raised edge, covered by what looks like norma mucous membrane, is observed.

It is common knowledge that healing of tissue after exposure to radium irradiation may be slow With the exception of a case treated in 1925, th reverse has happened in my cases. This is entirel due to the use of comparatively large quantities radium with an exposure of not more than 24 hour The report of the Medical Research Council for 192 on the medical uses of radium records the result the treatment of rectal cancer by 20–48 mg. of th element, left in situ for periods up to 10 days. Dela in the healing of the wounds was a noticeable featu in all cases. There is also, I submit, a grave danger sloughing of normal tissues.

Attention has been drawn, in my article publishe in the *British Journal of Radiology*, to the method dealing with the ureter, when constricted by growt by transplanting it into a growth-free part of th bladder. With further experience I wonder wheth this is necessary, provided no radium fibrosis produced around the duct. A reference to the not of my cases tends to support the view that relief pressure will probably result from the absorptio of dead carcinomatous tissue. Stress must be la upon the experimental nature of the work which h been undertaken on cases treated at St. Peter Hospital. The radium has been applied for the mo part to patients already exhausted by complicatio and the failures of operations or diathermy. Th disease has come under treatment in the inoperab stage, and in one or two cases the cancerous cachex has been profound.

Of 12 cases treated since 1925, four have been comple failures. Of the remaining eight, one was first treat 2½ years ago. He was a man of 64 with a large ulcerati growth of the right lateral wall, spreading to the intern meatus. Repeated applications of diathermy mere seemed to increase the hæmorrhage. On admission he w collapsed from the excessive bleeding and blood transfusi had to be resorted to. The bladder was then opened a half the growth excised, the remainder being surrounded b tubes of 10 mg. of radium left in situ for 24 hours. T patient was discharged 21 days later with a healed wou and passing a clear urine. For two years he enjoyed goo health, but in January of this year there was a recurren of hæmorrhage. Cystoscopy showed a growth involvi trigone and both lateral walls. 110 mg. were implant into the growth for 24 hours, and he was discharged 21 da

ter with the wound healed but with cloudy urine. In arch, 1928, cystoscopy showed dead growth on the right teral wall and right half of the base of the bladder, but no ematuria.

Three cases treated about a year ago are alive and in ir health. One had been attending the genito-urinary partment of a general hospital for three years on account hæmorrhage, and had had numerous applications of athermy. The growth involved the whole of the left teral wall, including the left ureteric orifice. 200 mg. radium were inserted for 24 hours, and he was discharged days after operation with the wound healed and clear ine. This patient has put on more than one stone in eight. On March 31st cystoscopy showed a slough on the t lateral wall, with rolled-over edge. The bladder capacity normal. There has been no hæmaturia but the urine ntains a small quantity of pus.

The second case is a partial failure, in that the patient has ffered severely from radium reaction. There was much ematuria on admission which diathermy failed to control. 0 mg. of radium were inserted into the growth, which cupied the whole of the left lateral wall and was covered slough and phosphates. The tubes were removed at e end of 24 hours. In March, 1928, cystoscopy showed no sible growth, but cystitis was present and the bladder as very irritable to distension. There was also rectal nesmus and tenderness of the mucous membrane on gital examination.

The third case was a man of 63, who had been operated on previously and treated by open diathermy for a growth the left lateral wall. When the bladder was opened for e second time on account of hæmorrhage it was found at there was an ulcerative growth involving the left half the internal urinary meatus and the major part of the t lateral wall. 180 mg. of radium were implanted around the margins of the growth and left in for 24 hours. The patient was discharged from hospital 21 days after operation, with the wound healed and slightly clouded urine, but no blood. On April 28th I cystoscoped this patient and found no growth, but bullous œdema of the left half of the internal meatus. His general condition was good and his weight had increased. The urine contained a small quantity of pus. He complained of irritation in the anus.

The remaining cases, four in number, have been treated within the past six months. The disease in all was in an advanced stage. Two of them have had their bladders opened at least twice for open diathermy. When I inserted radium tubes the prominent symptom had been continuous hæmorrhage. Within 24 hours in each case hæmorrhage ceased. The four of them, one a woman, are alive and in fair health.

Conclusion.

As a result of observations extending over a number of years, certain definite statements can be made. Firstly, vesical carcinoma, in our present state of knowledge, cannot be cured by radium irradiation, but a shrinkage of the tumour, even to apparent disappearance, may be expected. Secondly, severe hæmorrhage can be controlled, and therefore an improvement in the general state of health will follow.

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Clinical and Laboratory Notes.

ETANUS TREATED BY INTRACISTERNAL INJECTION OF ANTITETANIC SERUM.

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IN 1921 I published in THE LANCET (i., 1356) case of tetanus treated with large doses of antitanic serum. That case was not more severe, but ie period of treatment was longer than in the one ere recorded. The serum in the earlier case was given trathecally. In the present case, owing to lack of ogress during intrathecal administration, the intrasternal route was used on the fifth day with almost mediate lessening of the rigidity of the jaws. The tal quantity of serum used was less, being 192,000 its, as against 236,500 units given to the first tient.

A horseman, aged 21, a well-built, healthy looking man, as admitted to Hull Royal Infirmary on Feb. 22nd for iffness of the jaws. On Feb. 19th he had noticed his jaws ere stiff and thought he had neuralgia. On admission the asseter muscles were firmly contracted and he could only en his mouth a little, the greatest distance between the cisors being 0·75 cm. He complained of stiffness of the ws, the back muscles (especially between the shoulders), th legs, especially the left, and the abdominal muscles, hich were so rigid that the movements of the diaphragm ere impeded. This may have been due partly to the rigidity the diaphragm itself, as later some bronchitis developed. ie source of infection was evidently a sore on the left el, which was red and tender; the left leg was much stiffer an the right. He had other cuts on his hands and legs. iese were all treated with tinctura iodi and other antiptics. The pulse-rate was 100, the temperature 99° F., and e blood pressure 82/115. Heart, lungs, and urine showed thing abnormal. The knee-jerks were both exaggerated id ankle-clonus was present in both feet. There was no abinski sign. There was incoördination of both hands id slight pallor of the optic discs.

He was given large doses of antitetanic serum of high tency intrathecally, intramuscularly, and subcutaneously, r five days.

On Feb. 22nd the cerebro-spinal fluid was under increased essure. He was put on four pints of milk in the 24 hours. n the 23rd, at 3 A.M., grs. 20 of chloral and grs. 30 of potassium bromide were given, as he was unable to sleep and complained of headache and pain in the back of the neck and between the shoulders. He had a bad night. His diet was increased by adding three eggs and 2 oz. of sugar of milk per diem, with water ad lib. to dilute the toxin. A rectal wash-out was given. The sores were treated with tinct. iod. three times daily. On the 24th rhonchi were present in the chest, owing probably to the rigidity of the diaphragm and the recti abdominis, so he was put on a mixture of ammon. carb. and vin. ipecac. His teeth were frequently attended to. Lemonade and Valentine's meat juice, one drachm in water every four hours, were given. On the 25th his pulse became weak and irregular. Natibaine ℥ 15 was given three times a day. At the same time he developed a severe attack of herpes labialis, which caused him considerable discomfort. This cleared up fairly soon with an ointment of hydr. ammon. chlor., grs. 10, ung. boric, drs. 2, ung. zinc, drs. 6. The abdomen was still very rigid, but the legs moved more freely. The rigidity of the jaws continued, and with the greatest effort he could not open his mouth more than 0·5 cm. He had no headache and was taking well five pints of milk and five eggs daily, with water, lemonade, and Valentine's meat juice, one drachm four-hourly. A third of a grain of morphine was given at night.

On Feb. 27th, as the spasm of the masseters continued and the mouth could be opened only 0·5 cm. with much difficulty, 10,000 units of serum were given intracisternally under local anæsthesia, 1 c.cm. of 2 per cent. novocaine being injected into the skin and deep tissues at the back of the neck; 10,000 units of serum were given intramuscularly at the same time. After the intracisternal injection he had some headache all night, but this disappeared in the morning. On the morning of the 28th he stated that he had no headache and said that he "felt grand this morning." Eighteen hours after this injection his mouth could be opened to 0·9 cm. and both the abdomen and legs were less rigid. Later in the day he had slight headache. The optic discs showed slightly blurred outlines. The temperature was 98·4°, the pulse-rate 110; respirations 24.

On Feb. 29th the mouth opened more easily and the herpes had improved. He felt better in himself; his legs moved easily and were not so stiff. The abdomen was less rigid and the breathing was easier, due probably to the diaphragm being less rigid. On March 2nd the diet was increased to bread crumbs and mince. He was able to open his mouth 1 cm. On the 5th his mouth opened 1·1 cm. easily. There was still some rigidity of the abdomen, but no pain. The jaws did not feel so stiff. On the 6th the legs were less rigid, but the left was still more rigid than the right. The abdominal rigidity, although less than on admission, was still quite marked; the back muscles were much softer and felt more comfortable. On the 19th he could open his mouth 2·6 cm., which is about normal for him. There was still some rigidity of the abdominal muscles; otherwise he was in good health. On the 27th the rigidity of the abdominal wall had gone and he felt very well. He

was able to do work about the ward. On the 28th he was discharged.

Table of Injections of Antitetanic Serum.

Date, 1928.	Sub-cutaneous.	Intra-muscular.	Intra-thecal.	Intra-cisternal.	Total.
Feb. 22nd ..	—	10,000	20,000	—	30,000
„ 23rd ..	10,000	10,000	20,000	—	70,000
„ 24th ..	10,000	10,000	—	—	90,000
„ 25th ..	—	10,000	10,000	—	110,000
„ 26th ..	10,000*	10,000	—	—	130,000
„ 27th ..	—	10,000	—	10,000	150,000
„ 28th ..	10,000	—	—	—	160,000
„ 29th ..	10,000	10,000	—	—	180,000
March 2nd ..	3,000	3,000	—	—	186,000
„ 6th ..	3,000	3,000	—	—	192,000

Pathologist's report on cerebro-spinal fluid.—Wassermann, negative. Cells, less than 1 per c.mm. Protein, 30 mg. per 100 c.cm.

The intracisternal injection seemed to have a more marked effect on the spasm of the jaws than on the other muscles, and the improvement in his general well-being was due to his being able on this account to take more nourishment, as well as to a great reduction in the toxic condition.

Technique of Cistern Puncture.

The cisterna magna lies anterior to the occipito-atlantoid ligament. Fluid is obtained at from 4·5 to 6 cm. depth; in this case it was obtained at 4·5 cm. In another case punctured a week later it was 5·6 cm. before fluid was obtained. The hair is shaved off the head at the back for about two inches. Tinct. iodi is applied and 1 c.cm. of 2 per cent. novocaine is injected in the line where the puncture is to be made. The patient is put on his left side with his head suitably flexed; a dab of tinct. iod. is smeared on the mastoid process in the external auditory meatus and glabella line. The needle, guarded to 5 cm., or more in a big patient, is inserted just above the spine of the axis, which can be felt, and is pushed in until the edge of the foramen magnum can be felt with the point, going very slowly, in order not to blunt the needle. The point is depressed and pushed carefully upward, in order to keep away from the medulla. There is usually about 2·5 cm. between the dura mater and the medulla. The needle should be pushed very slowly after feeling the edge of the foramen magnum, the stylet being frequently taken out to find if fluid is reached.

It is a good plan to rotate the needle, as it helps it to pierce the membranes with less force and thus reduces the risk of injuring the medulla.

When the cerebro-spinal fluid begins to flow 30 cm. or more are withdrawn and replaced by a rather lesser quantity of serum. The head should be kept low, using only one small pillow, and the foot of the bed raised by blocks about 6 inches high.

A CASE OF RECOVERY FROM AMYLOID DISEASE.

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THE object of this account is to describe a case in which serious and advanced amyloid disease regressed completely when the septic focus was treated. Amyloid disease is rarely seen nowadays—regression appears to be outside ordinary clinical experience. Moreover, the case shows in a remarkable way how completely one lung can be thrown out of action without serious prejudice to the patient's vitality and activity.

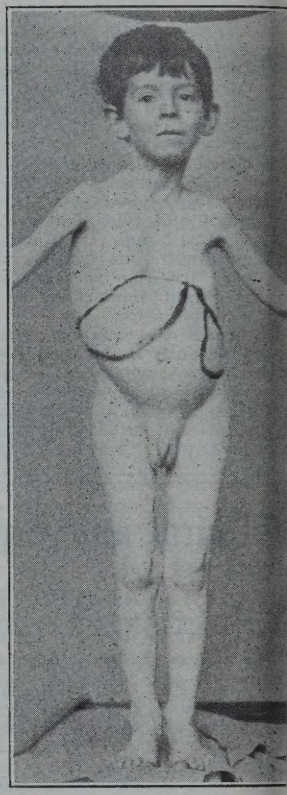
In January, 1918, the patient, the only child of a widowed mother, and then aged 4, was admitted for a post-pneumonic empyema. Drainage by ordinary intercostal incision was established and the child did well at first. After a little while drainage became inadequate and the boy became a severe invalid with fever and wasting. Against the most urgent advice he was taken from hospital and was lost sight of by us. He was in a critical condition for many weeks; he was unable to move his limbs and had to be wheeled about in a little carriage. Again and again the wound spontaneously healed and reopened. In January, 1919, he reappeared in hospital in desperate straits. The wound was reopened and good drainage established, with marked amelioration in the condition. After some months of fair health fever and wasting returned and obvious septic absorption from a thoracic collection was taking place.

In November, 1919, further drainage by rib resection was effected, and again a marked improvement in general physique was noted. The wound healed and again broke down. A further rib resection was done with careful wound toilet, and the boy was not seen again for several months, during which time he enjoyed fair health. In January, 1920, his health began to fail again, and a serious decline took place. There was fever, wasting, and never-ending wound discharge.

By May, 1920, he was very anæmic and extremely wasted; altogether a miserably cachetic specimen. The operation site was an ugly sinus, discharging freely. The fingers were clubbed. The smooth and very considerable enlargement of the liver and the spleen (see figure) together with albuminuria made clear the diagnosis of amyloid disease.

The sinus was reopened and irrigated; there was great improvement in general health and some lessening of the discharge, but again relapse took place.

His condition was now so critical that it was thought hopeless to do anything further. After much doubt, surgical measures were again decided upon, largely on account of the recuperative power which this particular boy had shown in each preceding partial recovery phase. In October, 1920, Mr. J. F. Dobson performed an extensive thoracoplasty in several stages. He removed the posterior portions of the ribs over the wound site, taking a piece out of each rib from the third to the tenth inclusive. Very free drainage was thus provided and the chest wall was allowed to begin its collapse inwards. The collapse, which constituted the essential mode of cure in this patient, took place gradually over a period of 16 months. From February, 1921, to March, 1922, steady drainage and wall collapse were carefully tended at home and firm improvement noted in all ways. Diminution in size of the liver and spleen, with steadily lessening cachexia, was noted as early as May, 1921. In April, 1922, the wound was finally and soundly closed and the chest wall was permanently collapsed. The collapse was so great as to obliterate almost completely the left half of the thoracic cavity. Thereafter he never looked back; he began to grow rapidly and soon attained good health.



The patient in May, 1920, showing deformity of chest and enlargement of liver and spleen.

In 1926 he was a vivacious, active schoolboy, taking his place among his fellows at work and play. The liver and spleen could not be palpated, nor could any signs whatever of amyloid disease be detected. The left chest was completely stove in and there was a slight compensatory scoliosis, but there was remarkably little postural deformity visible when the boy was clothed in a loose shirt, and there was still less physical disability. No evidence of activity in the left lung could be heard, but the right lung was hypertrophic. In 1928 continued good health and welfare are reported.

I am indebted to Dr. W. H. Maxwell Telling and Mr. J. F. Dobson for permission to record this case.

AN UNUSUAL CASE OF LYMPHOGRANULOMA WITH GENERALISED METASTASES.

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AND
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THIS case is worthy of record, as it is rare for mphogranuloma to develop general metastases and d fatally within a period of three weeks.

The patient, a Hindu male jeweller from Madras, aged 37, as admitted, on August 4th, 1927, into the medical wards the Sir J. J. Hospital with an out-patient diagnosis of ascites." The history was as follows:—For two months fore admission the patient had suffered from gradual largement of the abdomen, swelling of the feet, dyspnœa d cough, especially at night. The complaint started with rning pain in the abdomen which lasted for five days ly, and was followed by gradual abdominal enlargement. Fifteen years previously the patient had had gonorrhœa d a "sore" on the penis, and for the last seven years in in the abdomen on and off, made worse by meals, but lieved about two hours afterwards without any vomiting d without taking more food. The pain was, however, ver bad enough to stop him from working, and his general alth was quite good all the time. Five years previously had had for a few months intermittent fever preceded by gors. There was no history of dysentery. He was ually constipated.

He had drunk about half a bottle of whisky per day for years and used to smoke a number of "bidis" (Indian garettes) per day. He had, however, stopped using alcohol d tobacco since the present complaint started. Father d brothers were alive and well; mother had died of paralysis" eight years previously.

On admission the patient was wasted, anæmic, and had thopnœa. Temp., 98° F.; pulse-rate, 112; resp., 35. ne abdomen was greatly distended, and there were signs free fluid in the pelvis and flanks. In the epigastrium a ghtly nodular lump was felt. This was dull on percus-on, and the dullness was continuous with the liver dullness ove and the splenic dullness on the left side. The spleen as palpable three fingers' breadth below the costal margin. ne respiratory system, except for a prolonged and harsh spiratory sound, was normal. Pain in the joints was mplained of, but there was no fluid or any other abnor-ality in any joint. The patient had œdema over both et, but the cardiovascular and urinary systems were rmal. Except for the abdominal pain and some con-ipation the alimentary system was normal, the patient ving a good appetite and good digestion. There was no sible or palpable enlargement of the lymph glands in any rt of the body on August 4th, when the patient was first en, or on the 6th, when the abdomen was tapped and a tle blood-stained fluid was withdrawn. Examination of e cellular deposit in this fluid revealed cells resembling ithelial cells, and also a few multi-nucleated cells.

The patient was transferred to the surgical side on ugust 9th with a view to exploratory operation. For the st time since admission glands in the axillæ and groins ere seen to be enlarged. It was decided to tap the abdomen ice more before an operation was performed, and this was one on the 15th. No more than a few c.cm. of blood-ained fluid came out. However, the same kind of fluid gan to ooze out from the puncture in such large quantities at the dressings were completely soaked and had to be anged every half hour. On the 16th enlarged glands in ne neck were first noticed, and there was a rapid increase the size of the axillary and groin lymph glands. This d to a suspicion of some kind of leukæmia, but blood amination showed the following result:—Red cells: total unt, 4,200,000 per c.mm. White cells: total count, 00 per c.mm. Differential (300): polymorphs, 75 per nt.; lymphocytes, 22 per cent.; eosinophiles, 1 per cent.; sophiles, nil; large hyalines, 2 per cent.; abnormal ucocytes, nil.

On August 18th a lymph gland from the axilla was re-oved for microscopic examination, and the abdominal ncture, through which blood-stained fluid was oozing t continuously, was closed by a small plastic operation. y this time there were big glandular lumps on both sides the neck. The patient was going rapidly downhill, and ed suddenly on the 21st.

Post-mortem Examination.

Chest: Lungs collapsed, but normal in structure. Blood-ained fluid in the pleural cavities. Mediastinal glands enlarged. Heart and the big vessels normal except for a few atheromatous patches in the aorta.

Abdomen: Blood-stained fluid in the peritoneal cavity. All abdominal lymph glands enlarged. Liver enlarged but otherwise normal in appearance and consistency. No secondary deposits. Stomach and small intestines were normal, but in the large intestine a lump about 2 cm. in diameter was seen attached to the outer wall of the ascending colon, 4 inches above the cæcum. It projected into the lumen, but the mucous membrane was not ulcerated. The rest of the large bowel was normal. Spleen was very much enlarged and adherent to the diaphragm. A large white lump, about 6 cm. in diameter, was attached to the anterior edge and gastric surface. (This was the lump felt in the epigastrium.) Kidneys were normal.

Pieces were taken from the lymph glands, the spleen, and the ascending colon. Prof. V. R. Khanolkar examined them histologically and reported as follows:—"Lymph gland: The normal structure of the gland is entirely obliterated by a uniform tissue which shows extensive proliferation of endothelial cells, lymphoid cells, numerous plasma cells, and eosinophiles. Interspersed in this tissue are found blood capillaries and a varying number of large mononuclear and multinuclear cells with homogeneous cytoplasm and vesicular nuclei, which in multinuclear cells seem to override one another. The stroma is made up of loose connective tissue, rich in fibroblasts. Spleen: The capsule is very much thickened. There is hyperplasia of connective tissue stroma, and the substance is infiltrated by the type of tissue described above in connexion with the lymph gland. Intestine: The distinction between the submucous muscular and subserous coats is lost, and the normal structure is replaced by granulation tissue of the kind described in the lymph gland. The wall of the intestine is thickened (15 mm. in section) as a result of this process.

"Remarks: The tissues show the characters of a lymphogranuloma (Hodgkin's disease)."

This case was interesting from the diagnostic point of view. The history of addiction to alcohol and the ascites suggested cirrhosis of the liver, but the presence of blood-stained fluid and the character of the cellular deposit in it was in favour of malignancy. One of us (B. B. Y.) suspected a primary carcinomatous change in a cirrhotic liver, and the other (S. R. J.) suspected a primary growth of the stomach or the transverse colon, because of the epigastric lump and the long history of abdominal pains. The sudden enlargement of the lymph glands suggested further possibilities, such as generalised tuberculosis (though there was no fever), acute lymphadenoma, acute leukæmia, or a generalised carcinomatosis. The blood picture, however, excluded leukæmias. The diagnosis was really settled by histological investigation after death.

We are indebted to Prof. R. Row and Dr. P. V. Gharpure for the help given during the pathological investigations.

Medical Societies.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A MEETING of this Association was held on June 26th, Dr. AMY SHEPPARD presiding.

Dr. LETITIA FAIRFIELD gave an address on

CHILD GUIDANCE.

She said that she had recently had the privilege of studying the methods used in America for dealing with delinquent and difficult children and had been greatly impressed by them. The idea that the chief need of the difficult child was help in adapting itself to its surroundings was not a new one, but the scheme of clinics on a large scale designed to this end dated only from 1908. At this time a group of women in America, of whom the most prominent was a Mrs. Dummer, conceived the idea that the treatment of the juvenile delinquent was unsatisfactory and unscientific. Mrs. Dummer decided to finance a clinic under Dr. W. Healy in Chicago, and he found that if the motives of the child delinquent were studied, it often became apparent that he was not

abnormal or psychopathic. Without careful inquiry it was often impossible to tell whether the child or the environment was responsible for the delinquency. From the failure of the child whose bad conduct had brought it into relations with the police, Dr. Healy worked back to those of lesser degrees of maladaptation, and came to the conclusion that the development of faulty habits might be checked and impulses might be trained in the right direction if the child were studied at an earlier stage. Meanwhile, other sociological efforts were being made. Mr. Clifford Beers, who had had an acute attack of insanity in early life and had suffered harsh treatment, resolved to dedicate his life to securing more understanding treatment of the insane. A great society, the National Committee for Mental Hygiene, with branches in all the States, arose from his efforts, and here also it was found necessary to work back to early years in order to find the origin of breakdowns in later life. This work had not proceeded on purely Freudian lines, nor had the child guidance movement developed on psycho-analytical principles, though all modern psychology had absorbed something from Freud's ideas. The psycho-biological theories of which Dr. Adolf Meyer, of the Johns Hopkins Medical School, was the chief exponent, had had much influence on the child guidance movement. This conception of conduct was that it represented the reaction between personality and environment. Myer hardly recognised types of mental disease, only types of individuals reacting to different conditions. He made no sharp distinction between the normal and the abnormal, the sane and the insane. It was on these lines that American social work was developing. Dr. Fairfield proceeded to describe the organisation of the child guidance movement. It involved a preliminary inquiry into the record of the child at school and at home, and into the results of the standardised tests for mental ability. It was surprising how often the cause of the difficulty was that the child was being tried beyond its mental capacity. Sometimes an incorrigible child was merely an overlooked defective. The tests could only be evaluated, however, with reference to the child's emotional reactions. A physical examination was performed on each child and was followed by a careful study of its environment by a "psychiatric" social worker, who was trained on the lines of our C.O.S. workers, but with special instruction in psychology and in the mechanism of behaviour. Dr. Fairfield pointed out that in America less emphasis was laid on material and more on personal factors. If a social worker in this country found that a child lived in a neat house and had good meals, she reported that he had a good home, and if the child did not get on well, the inference was that it was his own wicked little fault. No account was taken of the possibility that the mother might nag at the child or quarrel with her husband, in which case the psychological atmosphere would be that of a bad home. In any home, one spoilt child might call forth revenge reactions on the part of the others. Since all these factors were reported, the American histories were fuller than ours, and this was an advantage. The most important examination of the child was the final one by the trained medical psychiatrist, who had before him the reports of all the other workers. The examination when completed usually gave clear indications for treatment for the child of pre-school age or of school age. Children who failed during the period of parental training of the simpler instincts might develop enuresis, bad habits, temper tantrums, and persistent and serious food fads. In a certain percentage of cases they were very intractable. The education of teacher and parent in their management was being undertaken in association with kindergarten and nursery schools. For children of school age a "visiting" teacher with the training of a psychiatric social worker acted as adviser to the staff on problems of discipline. She also visited the home and reported to the teacher and vice versa, acting as a liaison officer. Since these agencies were available to deal with difficult children, only the really intractable cases needed elaborate study at guidance clinics. These clinics dealt with conduct problems and also with retardation in school work. In America the child who did not advance with his class was considered a disgrace to himself and his teacher. Very often the retardation was not a question of intelligence, but of conduct; in other cases the children were naughty because they were mentally dull and were tried too hard. Dr. Fairfield explained that the guidance clinics were under voluntary bodies such as the Commonwealth Fund, or were run in connexion with the big hospitals. The Commonwealth Fund was a wealthy organisation that had financed nine demonstration clinics, which served also as training centres. They were about to start one in London and were financing it for three years. At the Johns Hopkins Hospital, Dr. Esther Richards was in charge of an excellent clinic under the general direction of Dr. Meyer. The treatment might involve a radical change in the plans for a child's life, and was especially valuable for "dependant" children who were boarded out by voluntary societies in homes that might not be suitable to the individual need without considerable adjustment. The expansion of the movement both for children and adults was remarkable. Charitable societies were beginning to run guidance clinics, also the great department stores. District nursing associations sometimes paid a psychiatric worker to advise the nurses. This expansion proved the value of guidance clinics more conclusively than any statistics.

Discussion.

Dr. NINA DOBBIE pointed out that in England also many dependant children were boarded out in homes.

Dr. ALICE HUTCHISON said that in Leytonstone an admirable clinic was being run, but that throughout this country the work was limited by lack of funds.

Dr. H. MACKAY asked what number of children could be dealt with at any one clinic. This was relevant to the financial aspect of the work.

Dr. FAIRFIELD, in reply, said that the Cleveland Clinic consisted of three doctors, three social workers, and two or three psychologists. That team could deal with 1000 cases in a year.

SOCIETY OF BRITISH NEUROLOGICAL SURGEONS.

THE summer meeting of this Society was held in Edinburgh on June 8th and 9th, under the Presidency of Mr. WILFRED TROTTER, and with a full attendance of members.

On June 8th Mr. NORMAN DOTT opened the proceedings by performing an operation, at the Nursing Home at 19, Great King-street, in which he removed an osteoma from the roof of the orbit by means of an osteoplastic craniotomy.—Dr. LOGAN TURNER gave an account of his work on "The Paths of Intracranial Infection," demonstrating the meningeal and vascular connexions, particularly those in relation with the nasal passages.—In the afternoon Sir E. SHARPEY-SCHAFER related the results of a study of nerve section and regeneration in his own hands. This was followed by a discussion introduced by Dr. H. M. TRAQUAIR and Dr. A. H. H. SINCLAIR on the Relationships of Ophthalmology to Neurological Surgery, with special reference to visual field defects.—Dr. GRAHAM and Mr. DOTT showed some cases illustrating this subject.—Prof. EDWIN BRAMWELL described a case of Intracranial Aneurysm, and showed a specimen.—A dinner was held the same evening at the North British Hotel.

On June 9th a demonstration of Radiograms of the Skull was given by Dr. WOODBURN MORISON and Dr. HOPE FOWLER. Dr. Fowler discussed the Radiotherapy of Intracranial Tumours, some of Mr. Dott's cases thus treated being shown.—Prof. D. P. D. WILKIE demonstrated a case of intracranial dermoid cyst, successfully operated on by himself, and a case

f acoustic neuroma in which a cerebellar decompression operation had been carried out.—Prof. JOHN FRASER showed a case of injury to the brachial plexus, associated with a fracture of the clavicle by direct violence, and a case of elephantiasis and trophic disturbance of a lower extremity in a child affected by spina bifida.—Mr. W. W. WAGSTAFFE read a paper on the Incidence of Traumatic Epilepsy after Gunshot Wounds of the Head, and gave figures of the frequency of Jacksonian and generalised epilepsy after these injuries.—The meeting concluded with a demonstration of Various Kinds of Cranial Anomalies by Mr. D. M. GREIG, Curator to the Museum of the Royal College of Surgeons of Edinburgh, given in the hall of the College.

OXFORD OPHTHALMOLOGICAL CONGRESS.

THE eighteenth annual meeting, held from Thursday to Saturday, July 5th to 7th, in the department of Human Anatomy of Oxford University, was opened by a short address of welcome from the Master, Mr. Philip H. Adams, Reader in Ophthalmology of the University of Oxford. Dr. Leonard Hill then opened a

Symposium on the Ultra-violet Ray.

He dealt himself with the biologically active rays, their measurement and their penetration of the skin and eye, the theory of the action and immunity to rays, the comparison of sun and lamps as sources, and the action of rays as evidenced by erythema, and touched on hæmo-bactericidal power, rickets, ergosterol, vitamin D, and pigment formation. Some interesting slides of the erythema produced by ultra-violet ray were shown.

Dr. G. M. B. Dobson, F.R.S., spoke next on the effect of atmosphere, the altitude of the sun, and the presence of ozone on the transmission and the energy of ultra-violet rays, illustrating his remarks with curves and photographs.

Dr. W. J. Turrell gave his clinical experiences of the practical administration of ultra-violet rays, emphasising the importance of the regulation of dosage. The lamp he had used for 13 years was the tungsten arc.

Mr. W. R. Ackland dealt with phototherapy in the treatment of dental disease, referring especially to pyorrhœa and its relationship to ocular diseases.

Dr. N. S. Lucas related his experiences of the treatment of rickets in marmoset monkeys by ultra-violet rays, using a mercury-vapour lamp. Reaction was observed in the eyes much more rapidly than in the human subject—i.e., in one to two hours—but passed off more quickly. He considered that some ultra-violet radiation was essential for monkeys in captivity.

Mr. G. O. Hume spoke on the local application of the rays to the eye, emphasising the importance of selection of cases and dosage.

Mr. A. F. MacCallan, whilst recognising the beneficial effect of phototherapy, urged the need for continued search for causal conditions, notably septic foci in teeth or tonsils.

Demonstrations.

In the afternoon Mr. E. E. Maddox showed an accommodation balance test, a new fixation site for the globe in intracapsular cataract extraction, and an apparatus for training amblyopia in squint on a new principle involving hand and eye.

Mr. Rayner Batten showed a collection of fundus drawings of diseases and anomalies of retinal and choroidal vessels.

Dr. Margaret Dobson showed a test for astigmatism in which the duochrome principle was applied to the Maddox "V" test.

Mr. George Young demonstrated the instruments he now uses in the operation of double sclerotomy for glaucoma which he has devised, and slides in which the effect of the operation could be seen.

Mr. W. Niccol showed slides of a carcinoma of the choroid secondary to carcinoma of the breast.

Mr. B. Cridland exhibited a test-type for children.

Annual Dinner.

At the annual dinner held in the evening in the Hall of Keble College Mr. Adams, who presided, mentioned that 18 new members had been elected during the year, the total membership being now 414, including eight hon. members. The attendance last year was 104, including a number of well-known ophthalmic surgeons from the continent and America. He regretted to have to record the loss since then through death of Prof. Felix Lagrange, a foundation member, Dr. Brownlow Riddell, Dr. W. J. Tyson, Mr. Fredk. Dale, and Mr. T. O'Kelly.

Friday morning opened with a preliminary report by Mr. Burdon Cooper on Spectroscopy of the Crystalline Lens with a lantern demonstration showing the results of the spectroscopic examination of normal and cataractous lenses. The spectrograms showed that in cataractous lenses potassium was diminished and calcium increased.

Mr. T. Harrison Butler next read a paper on Sympathetic Ophthalmia, which was discussed by Messrs. S. H. Browning, Malcolm Hepburn, H. M. Traquair, and A. W. Ormond.

Doyne Memorial Lecture.

This lecture was given by Dr. Arthur Thomson, Lees professor of human anatomy in the University of Oxford, who chose as his subject Observations on the Eyes of Birds. After reviewing the literature of the past 250 years on the pecten he described its anatomy with the aid of slides and models. He showed how the most prominent portion of this structure which projects furthest into the globe is more closely attached to the hyaloid membrane overlying it than the lateral portions. The hyaloid lying upon this black pigmented structure acts as a dark mirror and its function may reasonably be taken to be that of eliminating dazzle from the direct rays of the sun, with reflection of objects from the upper field of vision to some other part of the retina. The value of this in the case of all birds other than prey-birds would be at once seen. The latter hovering with back to the sun and in the region of dazzle as far as the ground bird is concerned is in a position of vantage. If, however, the bridge of the pecten is a dark mirror, reflecting the image of the prey-bird, nature has provided the ground-bird with a suitable means of defence.

At the conclusion of the lecture Prof. Thomson was presented with the Doyne memorial medal for the year.

Mr. G. R. de Beer, lecturer in comparative and experimental embryology in the University of Oxford, then gave a paper embodying original work on the development of the vertebrate eye.

In the afternoon a visit was paid to the Morris Motor Works.

On Saturday morning the session opened with a paper by Lieut.-Colonel Henry Smith, on the Nutrition of the Lens and Vitreous. On analogy with the uterus with its rhythmic contractions as a means of maintaining circulation and thereby nutrition, he suggested that a sluice-like action of the ciliary muscle of the eye occurred whereby the canal of Schlemm and neighbouring spaces were opened and relaxed and so aided the circulation of the aqueous humour.

Clinical Cases.

Reports were given of the following cases:—

Miss Ida Mann: "A Congenital Abnormality of the Retina."

Mr. John Rowan: "A Case of Gliomata of the Retina." Both eyes were removed for gliomata at 1 year and 5 months; no recurrence after over three and a half years.

Mr. George Young: "A Case for Diagnosis." Enuresis up to the age of 17, which disappeared after correction of some hypermetropic astigmatism.

Mr. J. A. Ross: "Keratitis with Intranasal Causation." Keratitis of 15 years' standing cured after treatment of an anterior ethmoiditis.

Mr. C. G. Russ Wood: "Case of Mikulicz's Disease with Complications."

Mr. W. Niccol: "A Case of Recurring Membranous Conjunctivitis."

Miss Marion Gilchrist: "A Case of Keratitis Marginalis Profunda occurring in Both Eyes."

In addition to the scientific exhibits a commercial museum was on view in which 14 well-known makers of ophthalmic instruments showed their latest forms of apparatus.

The attendance at the Congress was well over a hundred; the absence of members from abroad is to be explained by the fact that the International Congress of Ophthalmology falls next year at Amsterdam.

PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.

A MEETING of this Society was held in the University New Buildings, Edinburgh, on July 13th and 14th, Prof. J. LORRAIN SMITH, Prof. T. J. MACKIE, and Dr. A. G. MCKENDRICK in the chair.

W. M. CROFTON (Dublin) described a pleomorphic microbe which he had isolated from vaccine lymph and small-pox, and IVY MACKENZIE (Glasgow) dealt with another organism, obtained on many occasions from the cerebro-spinal fluid of an obscure nervous case, which appeared as threads cocci or diphtheroid bacilli, Gram-positive and Gram-negative, under different conditions.—L. S. P. DAVIDSON (Edinburgh) had found a great excess of *B. welchii*, *B. coli*, and streptococci in the stomach contents and fæces of cases of pernicious anæmia; the degree of sepsis was not altered when the anæmia was cured with a liver diet. No special type of organism could be identified as associated with the disease.—J. CRUICKSHANK (Aberdeen) pointed out that the Voges-Proskauer reaction (due to the production of acetylmethylcarbinol by certain intestinal bacilli) was obtained more quickly and certainly if glucose in the medium was replaced by cane-sugar.—D. P. D. WILKIE (Edinburgh) in cases of cholecystitis found streptococci much more frequently in the cystic lymph gland than in the contents or wall of the gall-bladder; the cocci thus obtained when repeatedly inoculated into rabbits produced a chronic cholecystitis and gall-stones.—H. J. PARISH and C. C. OKELL (London) retested 533 Schick-negative children one to seven years later and found 1·1 per cent. positive; of 440 children who had been made Schick-negative by immunisation 5 per cent. proved to have become positive after about the same length of time.—J. A. ARKWRIGHT (London) discussed the parallelism between acid and serum agglutinations.—C. H. BROWNING and E. M. DUNLOP (Glasgow) dealt with the influence of the amount of alcohol in the mixtures on the Wassermann reaction.—E. M. DUNLOP (Glasgow) described his observations on the fixation of complement by typhoid and other bacilli, and T. J. MACKIE (Edinburgh) discussed the action of normal serum and some non-antigenic substances.—J. GORDON and A. WORMALL (Leeds) had investigated the relationship between the bactericidal action of normal serum and its content in hæmolytic complement.—D. F. CAPPELL (Glasgow) found that filling up the reticulo-endothelial cells with, e.g., trypan blue had no influence one way or the other on the susceptibility of mice to pneumococci.—J. L. OWEN (Leith) argued that the present methods of determining blood groups were unsatisfactory owing to variations in titre and the presence of the third ($C\gamma$) component, which might occur without A or B. Direct cross-testing between donor and recipient was the only safe procedure.—G. M. FINDLAY (London) explained the determination of bacteria to a locus of tissue injury by showing that injections of histamine had the same effect.—C. PRICE-JONES (London) had measured the red cells in a number of cases of pernicious anæmia before and after treatment with liver, and showed that the cure of the anæmia did not remove the excess of abnormally large cells, though it usually brought the diameter curve nearer the normal shape and position.—C. J. POLSON (Manchester) described his experiments on the disposal of dialysed iron injected intravenously by the reticulo-endothelial system.—C. DIVER, F. M. TURNER, and A. E. BOYCOTT (London) gave an account of the inheritance of reversed symmetry and the non-inheritance of monstrous shell-shapes in a mollusc.—J. LORRAIN SMITH and T. RETTIE (Edinburgh) studied the intestinal absorption of fat in the guinea-pig and suggested that the mucosa stores fat in much the same way as connective tissue.—W. E. GYE and W. J. PURDY (London) described further experiments on the filtrability and stability of extracts of Rous tumours, and pointed out the parallelism between the action of various agents on the effective agent in the tumour and on the virus of pleuro-pneumonia.—A. L. TAYLOR and M. J. STEWART (Leeds) described six single and multiple plasma-cell myelomata; the clinical course is relatively benign.—H. G. CRABTREE (London) had measured the carbohydrate metabolism of various pathological epithelial overgrowths and found that lesions such as those of fowl-pox showed the respiratory features supposed by Warburg to be characteristic of malignant tumours.—J. S. YOUNG (Leeds) showed that hyperplasia of the pleural endothelium and of the nearby alveolar epithelium could be produced by injecting strong solutions of sodium chloride into the pleural sac and more readily by calcium strontium and especially aluminium salts.—D. M. MORISON (Edinburgh) tied the ureter and introduced dyes into the kidney pelvis; they were absorbed first by the lymphatics and afterwards passed up the tubules as far as the second convoluted tubule.—T. SHENNAN (Aberdeen) defended the proposition that external mechanical violence often plays a part in producing partial or complete tears of the healthy aorta.—D. F. CAPPELL (Glasgow) showed three instances of vertebral chordoma, and W. SUSMAN (Manchester) an obscure, probably neurogenic, sacral tumour. T. D. HAMILTON and N. M. DOTT (Edinburgh) correlated the cytological characters of cerebral gliomata with their clinical history. G. MCCALLUM (Edinburgh) described an ovarian teratoma in which carcinoma and chorion-epithelioma developed.—A. W. GREENWOOD, C. F. W. ILLINGWORTH, and R. D. MACKENZIE (Edinburgh) showed a new transplantable fowl tumour; C. F. W. ILLINGWORTH a series of specimens of cholesterosis of the gall-bladder and the mechanism of formation of cholesterol stones on a pigment nucleus. W. G. BARNARD (London) showed giant-cells in organising broncho-pneumonia, queer bodies in granulomata in a rabbit's lung, and a mass of fungi crowded with tubercle bacilli in a tuberculous cavity in the lung.—W. Q. WOOD and D. P. D. WILKIE (Edinburgh) had an exhibit of carcinoma of rectum.—E. M. DUNLOP (Glasgow) showed two unusual organisms from urinary infections, D. F. CAPPELL (Glasgow) a tumour of pleura with glomerular metastases, W. F. HARVEY (Edinburgh) pathological conditions associated with heat-stroke and a series of large microscopic sections. D. G. S. MCLACHLAN (Edinburgh) demonstrated the formation of "clubs" round masses of tubercle bacilli injected intravenously.—T. SHENNAN (Aberdeen) showed how any ordinary photograph can have the parts required marked in with Indian ink and then the rest be bleached with iodine and acid hypo, leaving a black-and-white line and dot drawing.

STOCK EXCHANGE DERBY FUND.—From the Stock Exchange Mutual Subscription Fund, popularly known as "the Stock Exchange Derby Sweep," a sum of £50,53 has been allocated to a long list of charities, chiefly hospitals being rather more than 10 per cent. of the total amoun received.

Reviews and Notices of Books.

ENTAL DISORDERS.

By HUBERT J. NORMAN, M.B., D.P.H. Edin., Medical Superintendent, Camberwell House, London; Lecturer on Mental Diseases, Westminster Hospital Medical School. Edinburgh: E. and S. Livingstone. 1928. Pp. 463. 14*s*.

Dr. Norman has fully justified his temerity, as he imself calls it in his preface, in adding yet another to ie number of text-books on mental disorders. There 're many new features in this handy volume, and it is ritten throughout with a literary knowledge which oes much to hold the attention of the reader.

The book commences with a section on the common ental disorders, including mental deficiency. This is llowed by a second part which deals with historical atters, psychology, pathology, treatment, and legal nsiderations. The next section commences with apters on ætiology and classification, and passes on describe mania and melancholia. There is no fferentiation of the involutional type of depression hich is described separately in most recent works. n excellent graphic representation of the phases of xcitement and depression in manic depressive states given, and Dr. Norman records several points oncerning the manic depressive patient which are eldom found, even in much longer works. For stance, he notes that the delusions in manic depressive insanity may persist in active or latent form hroughout the period of normality. This phenomenon s often encountered in practice, but seldom recorded text-books. Schizophrenic reactions are dealt with s dementia præcox and delusional insanity, a term nder which the author includes brief descriptions f paranoia and paraphrenia. There are certain bjections to the continued use of such a general term s "delusional insanity" in view of the close similarity etween dementia paranoides, paranoia, and paraphrenia. But the conditions are well described, and it nust have been a difficult task to keep the book vithin small compass. Dr. Norman divides the sychoneuroses into hysteria, neurasthenia, and sychasthenia. He avoids the term anxiety neurosis, nxiety hysteria, and obsessional neurosis. He does ot deal with modern psychopathology, and leaves pen the question of psycho-analysis in the treatment f these conditions. There is much to be said for this ttitude, especially since this handbook is likely to ecome popular with medical students, whose educaion in these matters requires to be undertaken with reat care.

In the chapter on mental disorders associated with odily diseases, it is surprising to find no mention of eart disease; disseminated sclerosis is ignored in the hapters devoted to mental disorders associated with rganic disease of the nervous system. The urgency f early recognition of general paralysis might well be nsisted upon in a future edition. The results of modern therapy are sufficiently impressive to make he early diagnosis of the disease a matter of great moment. Failure on the part of the practitioner to nsist on venepuncture and lumbar puncture as soon as there can be any suspicion of general paralysis may well come to be regarded as negligence by the public. Apart from these small points, the account of the mental disorders is one of the best presentations available for the busy student of medicine.

The section on psychology reflects the author's leaning towards the physiogenic school of thought. He is anxious to correlate disordered conduct with disordered neurones. Consequently, the school which regards the wish as the unit of mind is not very adequately represented in the text. Here, again, it is better that the student should be told nothing at all, than be given inaccurate and distorted accounts of the psychological concepts which have resulted from the work of Freud. Unique among text-books is the charming chapter on "clinical examples in life and literature." From the enormities of some of the Cæsars to the adventures of Mr. Preemby in "Christina Alberta's Father," Dr. Norman gives us a glimpse of a veritable gallery of insane portraiture drawn from history and literature. The reading of this chapter provides a great stimulus to the interest of a casual reader, and is likely to promote interest in mental disease among both students and practitioners. Finally, there are adequate chapters on mental deficiency, on pathology and treatment, and on the legal relationships of insanity. The bibliography at the end of the book reflects the wide reading of the author, and is a most useful appendage to the volume.

This book can be commended especially to the medical student. It contains a great deal of matter in a small space, and is admirably printed and illustrated. Dr. Norman is to be congratulated on his success in the apparently impossible task of writing a short text-book on mental diseases which will give the veteran fresh ideas and new outlooks, and will provide the recruit with a sound grounding in psychiatry.

TEXT-BOOK OF PATHOLOGY.

Lehrbuch der Allgemeinen Pathologie und der Pathologischen Anatomie. By Prof. H. RIBBERT. New edition by Dr. CARL STERNBERG, Professor of Pathological Anatomy, University of Vienna. Leipzig: F. C. W. Vogel. 1928. M 45.

Ribbert's well-tried text-book of pathology has been happily reinspired by Prof. Carl Sternberg. The volume is up to date and accurate. It is intended for students, and does not take the place of such works as that of Aschoff, though the chapter on fat necrosis seems to show a certain coincidence of matter and phrasing—perhaps inevitable in the circumstances in the two volumes. The 700 illustrations include a photograph of a female corpse burnt to death which seems redundant. Monstrous twins are stressed too much in a book which dismisses blood diseases and malaria rather summarily. The treatment of arterial diseases is particularly good. The volume will not tell the specialist in pathology much that he did not know, but it covers with excellent judgment the whole field of morbid anatomy, and to a less degree morbid histology.

FOOD INFECTIONS AND FOOD INTOXICATIONS.

By S. R. DAMON, A.M., Ph.D., Associate Professor of Bacteriology, The Johns Hopkins University. London: Baillière, Tindall and Cox. 1928. Pp. 266. 18*s*.

FOOD may be poisonous to man because of the presence of inorganic chemicals, organic poisons, pathogenic bacteria, or larger parasites. Classification is not simple, however, because some pathogenic bacteria, such as *B. botulinus*, do not actually invade the human body but cause disease by reason of the exo-toxin they produce when growing in food substances. This exo-toxin acts like an organic chemical poison, and the disease botulism resembles an intoxication more than an infection. Dr. Damon has attempted such a logical classification and divided his book into three parts, dealing respectively with infections from food, intoxication from food, and parasitic infections acquired through food. This makes a convenient grouping for Salmonella infections, tuberculosis, undulant fever, and actinomycosis because these are all true infections, but, though logical, it savours of pedantry to divorce botulism from other microbic diseases, and make it keep company with potato poisoning, the poisonous fishes, and toadstools under the heading of intoxications. It might be expected also that the author should have found a place for the inorganic poisons, arsenic, lead, copper, and zinc, since the organic poisons have been given a good deal of room. Within its compass the book gives a useful and reliable account of food poisoning and provides an adequate list of references to further sources of information. The author is on safer ground when dealing with the purely scientific

aspects of the question; that his clinical observations are not always well founded is illustrated by his remark that the only two really important diseases from which the Salmonella infections need to be differentiated are dysentery and enteric fever. Readers introduced for the first time to the gruesome menace of botulism may be disappointed when they turn over the pages a second time to look for some comforting statement as to how this disease, fortunately extremely rare, can be prevented by the reheating of food. Many supporters of the cleaner milk movement in this country will feel that pasteurisation should have received more than one paragraph, and that arguments for and against its use cannot be fairly stated in a single sentence.

It has been said that food is the one subject in which everybody is interested. There is little doubt that this book will be widely read and act as a useful source of knowledge.

THE MENOPAUSE.

Die Wechseljahre der Frau. Von Privat-dozent Dr. HANS ZACHERL, Assistent der Universitäts-Frauenklinik in Graz. Vienna: Julius Springer. 1928. Pp. 127. R.M.750.

This paper-covered book on the menopause contains a series of post-graduate lectures delivered by the author. A section of ten pages deals with the physiology of the menopause, including its hygienic management, but the greater part of the book is concerned with its pathology, including hæmorrhage, diseases of the genitalia, and functional troubles such as vertigo, flushings, and other vascular and nervous phenomena. It is not to be expected that in such a slender volume all the diseases occurring at the menopause should be fully dealt with; for example, only about two pages are devoted to cancer of the uterus. The chief value of the work lies in the fact that attention is directed to diseases and functional disturbances *peculiar* to the menopause. In many respects the pathological nomenclature used differs from that familiar to British readers. Among the causes of menopausal metrorrhagia is included abnormal persistence of the Graafian follicle, which becomes cystic and palpably enlarged. The bleeding in these cases may be so severe as to lead to fatal anæmia, and is accompanied by enlargement and softening of the uterus and thickening of the mucosa. One of the commonest causes of pathological hæmorrhage at the menopause is stated to be defective power of inhibition of the corpus luteum leading to sudden ripening of the follicle. The ovary contains numbers of large and small, mostly atretic, follicles, and the endometrium undergoes hypertrophy and becomes polypoidal. Other causes of menopausal bleeding are fully discussed—e.g., arterio-sclerosis, vasomotor disturbances, and "adenomyosis." In the account of the last-named condition no note is taken of British or American work. The book is well worth the attention of British readers, if only for the frequency with which familiar conditions are viewed from an unfamiliar standpoint. A good discussion of the German literature on each subject is included, and a bibliography of some 300 references is appended.

EXPERIMENTAL MEDICINE.

An Introduction to the Study of Experimental Medicine. By CLAUDE BERNARD. Translated by HENRY COPLEY GREENE, A.M. New York: The Macmillan Company. 1927. Pp. 226. 12*s.* 6*d.*

THIS book, which first appeared in 1865, is now a classic. But the publication of Mr. Greene's excellent translation gives us an opportunity of directing the attention of the younger members of the profession, and especially of those engaged in research, to an admirable work. Every student of medicine knows of Claude Bernard as a great physiologist; few are aware that he sat in the Chair of Medicine at the Collège de France, while none, unless he has read this book, can follow closely the spirit in which his work was accomplished. This introduction to the study of experimental medicine, as Prof. Lawrence Henderson points out in his appreciation of the author, gives to the student some understanding of the art of research and of the inevitable conditions and limitations of scientific discovery—in short, makes him understand what science really is. He will learn from the numerous examples which Bernard draws from his own investigations something of the working of the mind of a man of genius, notably the necessity for philosophic doubt, for the avoidance of fixed ideas and for the preservation of freedom of mind. The book is more than a mere practical guide to the research worker as to how discoveries have been and are to be made. It meets and deals adequately with the criticism directed even to-day against experimental medicine by physicians of repute. The fact that medicine must always be something of an art does not imply that it should remain purely a science of observation. It is not sufficient merely to observe and foresee the course of diseases, and it is doubtful if even the most ardent disciple of Hippocrates acts up to the strict tenets of his faith by refusing to attempt in any way to alter their natural progress. Observation of patients must always be the constant basis of medical studies, empiricism acting more or less blindly is a valuable ally, but it is by the experimental method that we can most certainly isolate the essential elements of a disease, grasp its characteristics, and guide its treatment.

Paul Bert, the pupil and successor of Claude Bernard, praised this book for the masterly exposition of the rules of the experimental method, for the clarity of the attack on the great problems studied, and for its admirable literary style. In the translation these merits are no less obvious.

ALLEN'S COMMERCIAL ORGANIC CHEMISTRY.

Fifth edition. Vols. IV., V., and VI. Edited by S. S. SADLER, E. C. LATHROP, and C. A. MITCHELL. London: J. and A. Churchill. 30*s.* per vol.

Vol. IV. (740 pages) deals with the characteristic constituents and analysis of essential oils, resins, india-rubber, gutta-percha, balata, &c. The essential oils are discussed in two sections, one describing the individual oils, and the other the various chemical substances found in them. Comparison of this volume with the corresponding one of the previous edition shows that it has been largely rewritten and contains much new matter, more particularly in those sections dealing with general methods of analysis and with investigations of resins and of the important constituents of essential oils. The source and properties, physical and chemical, of these oils which play an important part in medicine, are set out clearly and concisely. The long interval between the publication of Vol. IV. and the two subsequent volumes caused some inconvenience to those who use this work for reference and it is to be hoped that the concluding volumes will soon appear. The subject matter of Vol. V. (700 pages) includes tannins, the different kinds of ink, colouring matters of natural origin, and colouring substances in foods, benzene, aniline, pyridine, acridine bases and so forth. Mr. Mitchell's discussion of inks is full of interest; there is a surprising amount of chemistry involved in their manufacture. Included in this volume are benzene and its homologues logically leading up to the subject of colouring matters and synthetic dyes, to which the whole of Vol. VI. (658 pages) is devoted. This volume consists mainly of two long articles which cover the field of identification of the dyestuffs, and the testing of the substances obtained by splitting up the dye colour. To the colour chemist this volume will be invaluable.

THE price of "Simple Goitres," by Colonel R. McCarrison (Baillière, Tindall and Cox) is 10*s.* 6*d.* and not as stated in our review of July 7th (p. 17).

THE LANCET.

LONDON: SATURDAY, JULY 21, 1928.

THE DEMAND FOR RADIUM.

THE International Conference on Cancer, the proceedings of which commenced on Tuesday morning last, has given already an opportunity for serious consideration in respect of the shortage of radium, which is occurring exactly at the period in its therapeutical history when its value is being definitely recognised. It can be taken for granted that, as the discussions in the various Sections of the Congress go forward, further evidence of this shortage will be forthcoming, but sufficient emerged on the first day of the proceedings to show that there is likely to be a demand for radium that cannot easily be satisfied, although it is the legitimate outcome of scientific investigation. It would seem to be a duty upon all authorities whom our profession immediately serve, to endeavour to obtain an improvement of the situation. Taking our own country as an example, there is no doubt that we are under-supplied with radium for medical purposes, and this can surely be said for other countries where medical research and scientific therapeutics are equally largely at the service of the community. The discussion at the International Conference on the relative value of surgery and radiation in the treatment of three of the most formidable regional divisions of malignant disease proves the difficulty of obtaining a sufficient supply of an invaluable weapon of treatment, and that this should be the situation to-day is tragic. For the use of radium in the treatment of cancer is not a new form of treatment or still in the speculative stage. It was introduced over 20 years ago, although at first the demand was small. Indeed, it may be said that for ten years after the introduction of the treatment the large majority of the medical profession was sceptical of the value of radium in malignant disease. Now, however, the position is altered, and those who are in touch with modern methods are convinced that radium, when properly applied, is a very valuable curative agent in malignant disease. This conviction has not been the outcome of any particular form of propaganda directed towards the optimistic view; rather it represents the massed opinion of a good many observers who have arrived at their conclusions individually, while to some extent the public also has been able to see the good results which have followed well-directed radium therapy, when the treatment has been applied properly to the appropriate cases. We may therefore assume that the medical advisers to the Ministry of Health are aware of the increased confidence now being placed in radium, and are also aware that in the not very distant future pressure may be put upon those in authority to assist in procuring it in response to urgent requiral.

It may be useful to pass in review some of the stages in the world's production of radium, and in particular to note the marked fluctuations in price. Soon after its discovery and isolation by Prof. CURIE and his wife, Madame CURIE, radium was prepared in several laboratories, when it was possible to sell it at as low a price as £2 per milligramme of the element. Then Prof. GIESEL in his laboratory at Brunswick, among others, prepared radium bromide of a high grade of purity at the same moderate price. When, however, radium began to be produced on a commercial scale the price rose rapidly, and throughout the war, when radium was in big demand for other than medical purposes, the price rose to £30 per milligramme of element. From that price it has fallen, but the figure is now about £12, and the price seems likely to remain about the same for intelligible reasons. The war had its special conditions, but it is natural to inquire whether there is any justification for charging £12 for an article which can on a laboratory scale be sold at a profit for £2. It would appear that here we have an unusual case where what is possible in the laboratory is not possible in the factory, and that small production is cheaper than large. The operations involved in the extraction of grammes from even a high grade ore is a large scale operation involving spacious premises, much labour, and many skilled operators, while at the moment there is but one source of mass supply of raw materials. At first Europe provided the supply, but, when the European reserves had been exploited, the American producers found that it paid them to extract radium from a very poor grade ore known as carnotite. This situation may have justified the enhanced cost, but now a find of much richer mineral in the Belgian Congo has resulted in the Belgian owners, the Union Minière de Katanga, becoming producers for the world of radium. Practically speaking, the radium that is now being bought and sold all comes from this source, while the monopoly bids fair to exist for some time. It would seem that only a discovery of a new source can ease the situation, but it would have to be a really rich deposit that was found before entry into competition with the existing producers would be profitable. All effort, however, to reduce the cost of radium is worth while. If medicine requires in this country say 20 g. of radium annually for the treatment of cancer about a quarter of a million pounds must be paid for it. This is a considerable sum even for a rich country to contemplate the spending of, while poor nations are hopelessly penalised at the present time.

The expense of radium makes it very necessary to consider, after it has been obtained, how it should be used, and what machinery, if any, can be put into action which will ensure its most efficient and most economical employment. If the proceedings at the Conference supply suggestive answers to these questions much practical good may result. Radium therapy has reached its present position largely as the result of a number of individual persons carrying out clinical work on cancer in an earnest spirit of investigation; a good many countries have contributed their individual researchers, and among these France is prominent indeed. It was right, therefore, that it should fall to Prof. CLAUD, REGAUD, the much respected head of the premier Radium Institute in the world, to open the first series of debates on the therapeutic value of radium, while his views on one of the questions set out above are already known. For Prof. REGAUD has expressed the opinion that it would be a mistake to increase in France the existing number of anti-cancer centres where radium therapy is employed, holding clearly that radium work is of a highly specialised kind and should be as far as possible centralised. This opinion may hold a very definite message for our country. Though there are no anti-cancer centres so-called in this country, there are quite a number of foci where radium therapy has been going on for some years. The radium investigations initiated by the Medical Research Council in 1921, and continued since then, need no special mention at this stage to our readers, but it might be well to bear in mind the 12 centres which are included in this scheme, and to

realise that here, at any rate, are centres where current technique is known and practised, and where new modes are tried out and developed. It might therefore be profitable to discuss the possibility of such centres acting as coördination units in a national scheme of radium therapy. The extension of radium therapy to many of the poor-law institutions of the country would appear to be inevitable in some form or other, and they would have nothing to lose, but much to gain, by being affiliated with centres which have been through the difficult period of probation.

THE PROBLEM OF HOOKWORM.

SEVEN years ago the conclusion was reached by certain workers on hookworm that it is futile to try to determine with the microscope whether the last ultimate parasite has been removed from an infected patient. Their technique was unspecified, but their dictum undoubtedly encouraged the practice of treating whole communities as infected on the ground that hookworm had been found in individuals. When this plan has been adopted the anthelmintic drug has sometimes killed people whose infection was quite unproved, and these casualties have brought into disrepute, and even ended, local campaigns against the disease. While CLAYTON LANE has clearly established how great are both the bionomic and economic human benefit accruing from disinfestation of a community paralysed by the disease, and has also shown that there is no scientific justification for the assumption that the lightly infected are of no importance in public health, he has condemned this herd treatment without diagnosis as impolitic, unscientific, and immoral. If this is so, there is no escape from the necessity to determine the presence or absence of the last ultimate hookworm. The proportions of the task may be seen in his estimate that 800 millions of mankind are infected with the worm. Since each person requires individual and accurate diagnosis, diagnostic technique becomes at once of prime importance.

Diagnosis must rest on examination of fæces for ova, and for this some method of concentrating ova and separating them from the obscuring fæcal material is necessary. With the vast numbers to be examined it is essential that both concentrative preliminary preparation and microscopical examination be made so far fool-proof that they can be delegated under supervision to the cheapest labour compatible with accuracy. The mass diagnosis of hookworm infection must be free from error and must not be costly. On the forbidding quest for a particular concentrative method which would best fulfil those conditions, CLAYTON LANE has spent ten years.[1] He adopted the principle, neglected by others, that any technique, "concentrative" or "control," which from the same evened quantity of fæces habitually delivered, quantity for quantity, more ova than did any other, was of necessity the most nearly accurate. Repeated testing, under similar conditions, of the various concentrative techniques in use, by such "control of controls," has given illuminating results. In this searching trial the method of direct centrifugal floatation (D.C.F.) which he devised, developed, and standardised, has proved the most efficient for those who require certainty in diagnosis of the presence or absence of hookworm ova, and accuracy in counting them. Its accuracy and easy readiness in use have already been demonstrated both in the hospital laboratory in England and in the hookworm field in the tropics, where its more extended employment, a it is inexpensive, waits only on wider publicity fo its advantages. D.C.F., in the first or diagnosti spin, and using rapid lift, collects on the average 8 per cent. of the hookworm ova present in 1 c.cm. o fæces in a light infection. Pushed to finality it ha not shown an ovum content persistently less tha about 30 ova per c.cm., but CLAYTON LANE ha marshalled cogent evidence to show that this repre sents "the minimum ovum content normal for hook worms"—that is, the number of ova present in 1 c.cm of fæces if a single female is ovipositing normally.

Direct centrifugal floatation collects tricho strongylus ova with the same facility as it doe hookworm ova, and also, in striking manner, giardi cysts. Its author is to be congratulated on a patien and admirable research whose result, long needed is of immediate usefulness and value. It make possible that high diagnostic efficiency which, h insists, is indispensable if the hookworm problem i to be solved by humane and scientific means; fo however convinced an administration may be of th moral and material benefits of disinfestation, th money is nowhere available in the tropics to carr this out on a country-wide scale. Every farthing therefore, spent on every section of the campaig must be made to produce the greatest possible benefit and it has not yet been seriously envisaged tha prevention of infection for most of the hundreds o millions of human beings now exposed to infectio and reinfection can proceed otherwise than b expulsion of the parasite from those carrying it It is true that if all wore boots, or could use th conveniences of a water-borne sewage system, th infection would become a rarity. In fact the 80 million infected are barefooted, and—what is vita to the problem—are left to their own particula and too often peculiar, fancy as to where they sha defæcate. Attempts to control this wayward fanc are wisely held up until effective latrine systems ca be devised. The only basis of efficiency here is accurat knowledge of the bionomics, and especially th migratory powers of the infective ankylostom larva. Its life in fæcal material and soil has repeatedl been studied, notably of late by many America workers. Vertical migration of the larvæ was note but their recovery from a culture has been considere a dependable measure of the number that ha developed; and their disappearance a token of the death. Then FÜLLEBORN'S experiments demonstrate that strongyloides larvæ at the infective wanderin stage migrated in every direction and every plan Now CLAYTON LANE[2] shows by ingenious experiment in conditions in which there was control of sing factors, that ankylostome larvæ migrate laterall as well as up and down; and that, in hydraulic o other conditions favourable for migration, the bett nourished and the more vigorous (that is, more capabl of producing infection) the larvæ, the fewer will remai behind to be enumerated. Their absence ofte signifies not their death but their vicious vitality. I his experiments every culture was surrounded by water trap into which the migratory infective larv tumbled. It was noted that few escaped from th water trap—a plain pointer to the style and form o the effective anti-ankylostome latrine. Untrappe cultures, therefore, can afford no assured indicatio as to viability of hookworm ova, longevity of larv in soil, or their migratory capabilities. And it is c untrapped cultures that nearly the whole of ou supposed knowledge on these essential matters is a present based.

[1] The Mass Diagnosis of Hookworm Infection, The American Journal of Hygiene, vol. viii., May Supplement, 1928.

[2] Trans. Roy. Soc. Trop. Med. and Hyg., 1928, xxi., 309.

DICHOTOMY OR FEE-SPLITTING.

WE published last week a letter from a correspondent, who gave a very good reason for remaining anonymous, on what he described as an obnoxious practice which he had reason to believe is rapidly extending in certain parts of London. This practice consists in the diversion of part of a consultant's fee, without the knowledge of the patient, to the practitioner who has advised the consultation. The patient believes that his whole payment is made to the surgeon or physician who has been called in, whereas part of the fee has, in fact, been deducted as a commission for the practitioner. There are, we have been assured, a large number of consultants in this country who have no cognisance of any such practice, and these may be inclined even to question its occurrence, but it may be recalled that several years ago, in accordance with a widely felt desire, a meeting of consultants and specialists was called in a provincial centre to discuss the practice, and two resolutions were passed and circulated to all the practitioners in the neighbourhood. The resolutions were worded thus :—

1. It is improper for a Consultant to transfer any portion of his consultation- or operation-fee to the Practitioner who has called him in. The Consultant who offers or agrees to such payment, however innocently, is open to the suspicion of paying a "commission" for his own advantage. The Practitioner who accepts or asks for it cannot maintain the position of a trusted and unbiased adviser as to the need for a consultation and the selection of a Consultant.

2. No Consultant or Specialist shall pay to the General Practitioner who is associated with him in a case any part of an operation-, consultation-, or so-called "inclusive" fee, unless he informs the patient or his representatives of the services for which the payment is made and the amount of such payment.

The situation is one which has been freely discussed for some time past in the United States of America, and at its April meeting the New York Medical Society received a report on the subject from its Committee of Economics. This report was, it appears, tabled without any vote being taken upon it, and our contemporary, *American Medicine*, in expressing its disapproval of the abortive result adds it would be interesting to have some patient sue a member of the profession for the return of money known to have been paid to the doctor referring the case. The word "known" is the crux, for in this country and, presumably, also in the United States, both the offer and the acceptance of a secret commission are punishable at law, and evidence is therefore difficult to come by. A mass of information is, however, now available owing to the action of the *Medical Journal and Record* (of New York) in throwing open its columns to its readers in the form of an "open forum," without editorially taking any sides in the matter. A questionaire was submitted to readers with the remark: "We want you to have your say, and we want you to be indulgent enough, if indulgent it may be called, to hear what the other man has to say, and so the matter stands. This is your department. Make use of it." The material result has been some 55 columns of print embodying the personal views of several hundreds of doctors. These views are extremely varied. Two groups, as no doubt was to be expected, predominate—namely, those who wish to deny, with more or less emphasis, the existence of the practice at all; and those who have utilised the opportunity for criticising the behaviour of their colleagues with an extreme, if not imaginative, freedom. It seems clear, from the mere number of the former group, that there are many members of the medical profession, especially in the Eastern States and their large towns, who have not come in contact with fee-splitting at all; whereas it is equally evident that in the Middle West, and still more in the Southern States and in Texas, fee-splitting is by no means exceptional. A New Orleans correspondent states that in Louisiana it is a common practice; in Alabama it seems to have been almost a rule 15 or 20 years ago, although not nearly so prevalent now; in Ohio a signed contribution states that it is universal, while a Wilmington practitioner understands, in a general way, that many of the general surgeons and specialists in Cincinnati split fees with small-town doctors who refer them cases. A Minnesota physician remarks that the practice is quite inevitable under present conditions, the large fees received by surgical specialists being its foundation. The ex-president of Iowa State Medical Society says, quite frankly, that 75 per cent. of the doctors of Iowa and Nebraska "want splits." These examples may suffice to give some idea of the relative prevalence of fee-splitting in the various United States. The report does not cover Latin America, if only for the reason that division of the total fee paid between the specialist and the family doctor is apparently the accepted practice there.

Something has already been said, incidentally, regarding the circumstances which have brought about such a state of affairs. A New York correspondent's statement may be given as an example. He writes: "The newcomer, or unknown specialist, in his desire to increase his clientèle, offers part of his fee as an inducement to the family physician. Many young surgeons find it impossible to build up a practice any other way. Some prominent specialists with good followings take into consideration the plight of the referring physician and give him a portion of the fee on the basis of good fellowship." For these reasons he regards the hope of eliminating fee-splitting completely from medical practice as rather meagre, and there is, in fact, throughout the symposium not only a wide admission of the practice and of its inevitability, but a good deal of justification for it. The legal profession, writes a Baltimore physician, splits fees and finds nothing wrong with it. (The analogy would fail in this country if applied to a busy barrister sharing his fee with another barrister who has devilled a case for him, for there is no element of agency.) A New York physician feels that for the younger man fee-splitting should be legitimatised, for it cannot be eradicated. As a remedial measure another suggests the sharing openly of the surgical fee between the surgeon and the practitioner who refers the case, the surgeon receiving two-thirds or three-quarters of the fee, and the medical man openly receiving one-third or one-quarter. An official of the Prudential Insurance Company remarks that fee-splitting amounts to doing the right thing in the wrong way. From Denver comes the suggestion that the patient should be informed of the fact that the diagnosis of the surgical condition by the attending physician is frequently worth as much to the patient as the operation itself. The practitioner should therefore have courage enough to charge for his diagnosis and time; and, if need be, the specialist should mention to the patient that he is cutting down his fee so that the patient can pay the family doctor. The hardship is specially well stated by a New York contributor, who writes: "The family physician who calls with his patient to the consultant and spends from two to three hours or more, or visits the operating room, he is entitled to a reasonable fee. The patient should be told by the consultant or surgeon that his fee covers the fee for services of the family physician. Call it a collective fee or what you please. Patients will not pay the family physician any additional conference fee." And another remarks: "It is rather peculiar that it is perfectly ethical for the surgeon to pay his assistants out of his fee and yet not allow the family physician to assist and pay him." The situation is summed up in an article by Dr. A. L. Wolbarst, of New York, who after acknowledging that fee-splitting is a serious evil and one growing by leaps and bounds (not only in America but in Europe as well), describes it as the natural out-growth of the widespread specialisation in medicine, which Dr. Thayer deplored in his presidential address to the American Medical Association last month. Both the surgeon and the practitioner have come to realise that prosperity

lies in the close economic coöperation which is represented by the split-fee. Under existing practice, the amount of the specialist's fee is paid to him, and he either retains it entirely, or returns part of it secretly to the family doctor, in the form of the illicit split-fee. "The time has come," he says, "for a revision of the code and for recognising the principle of open ethical fee-sharing as just and equitable." This modification of the code should provide that the specialist's fee shall include the doctor's fee, and it shall be deemed as much a violation of the code for the specialist to withhold the doctor's rightful share as for the doctor to demand, or the specialist to offer, more than the duly established proportion. He does not regard the plan as perfect, but submits it as likely to improve the position of all three parties to the bargain.

The symposium may, as we have suggested, not represent very closely the average medical view in the United States, but it will have afforded an opportunity of utterance for extremists in both directions. Nevertheless no one can read the testimony brought forward in this "open forum" without gaining the impression that there is a situation which is not being met by ethical action alone, and may require some adjustment to the changing conditions of medical practice, especially in relation to the development of specialisation in America.

Annotations.

"Ne quid nimis."

PNEUMONIA ON THE RAND.

IN 1912, following a visit to the Rand by Sir Almroth Wright, a system was inaugurated of routine prophylactic inoculation of natives employed in the mines against pneumococcal infections. Since the independent discovery by Sir Spencer Lister, working at the South African Institute for Medical Research, and by American observers, that pneumococci can be separated into different serological groups, the vaccine used has been a mixed one. In 1919 [1] we commented on the progressive fall in the incidence and mortality-rates of lobar pneumonia in the large population at risk. The average annual death-rate for the years 1908 to 1911 was about 12 per 1000. After that it fell steadily, with the exception of a rise in 1915, which coincided with a reduced issue of vaccine; by 1918 it was already less than 4 per 1000. The descent in the curve has been attributed in South Africa and elsewhere to the use of the vaccine.

Unfortunately, though prophylactic inoculation is still being zealously carried out and the efforts to improve the hygiene of life in compounds have certainly not been relaxed, during the last few years the incidence- and mortality-rates have shown a tendency to rise. In the important group of mines controlled by the Rand Mines, Ltd., for example, the mortality-rate, which was under 1·5 per 1000 in 1920, has since risen again irregularly, until in 1927 it was only just under 5. An attempt to ascertain the factors responsible for this disappointing rise has recently been made by the Transvaal Mine Medical Officers Association. In August, 1927, following on a communication from the Gold Producers' Committee, the Association appointed a subcommittee, consisting of Dr. A. J. Orenstein (convener), Dr. H. Butt, Dr. A. Frew, and Dr. C. Scholtz, to report on the serious increase in mortality from disease among natives in the earlier months of 1927. For this increase the pneumonias were found to be mainly responsible. The subcommittee issued a questionaire to all mine medical officers in September last, and a critical summary of the information received is the substance of their report, which has now been printed in the Proceedings of the Transvaal Mine Medical Officers Association (April, 1928). The data under review concern the natives employed in 30 mines during the periods from Jan. 1st to August 31st in 1926 (168,000 boys), and in 1927 (166,000 boys). Of these, approximately 94,500 in each year were South African natives, the rest being from the East Coast. Both lobar and broncho- and influenzal pneumonias were studied and the tables and statistics on which the conclusions are based are set out in full. Some interesting results have emerged. For example, in both years approximately half the cases of lobar and of broncho-pneumonia occurred in the first three months of employment; no definite correlation was observed between recruiting ratios and incidence and mortality from any form of pneumonia. The case mortality varied only slightly, showing that the severity of the attacks was not markedly different in the two years. The chief conclusions reached are that the physique of the native recruits plays a considerable rôle in both attack-rate and mortality-rate from the pneumonias; that natives sleeping singly in partitioned-off concrete bunks are less prone to attacks of pneumonia; that there is probably a periodicity in the incidence of pneumonias, and that the Witwatersrand mines are now going through a period of rise in the curve of incidence. A graph giving the incidence of pneumonias in Chicago between the years 1867 and 1925 lends support to this suggestion. No ground was found for any suspicion that slackness in vaccination might be responsible for the increased incidence and mortality. Some of the statistics on lobar pneumonia among underground workers seemed to indicate that pneumococcal vaccine gives better prophylactic results in one 2 c.cm. dose than in three c.cm. given in divided doses, which is the more usual method. On one mine only one inoculation of 1 c.cm. of pneumococcal vaccine was used, and except in the incidence of lobar pneumonia among East Coast natives, this mine had a smaller incidence than the average for all the mines. The recommendations made are that the physical standard of recruits should be correlated with that recommended by the Association, that all compound rooms should, as soon as possible, be fitted with partitioned-off concrete bunks, and that the whole matter of prophylactic vaccination should be exhaustively examined at an early date. At the meeting of the Transvaal Mine Medical Officers Association, to which this report was presented,[2] some of the medical officers spoke in favour of discontinuing inoculation. A better plan and one which is likely to be adopted, is the suggestion that the natives on each mine should be divided into equal batches, of which one only should be inoculated. If administrative difficulties prevent this simple differentiation of employees, a certain number of mining areas could be set apart and used as controls. The opportunity for a clear test seems to have arrived. While the incidence- and mortality-rates were decreasing, it might not have been justifiable to withhold prophylactic treatment. But when these rates are rising, in spite of vaccination, there can be no ethical reason why a large-scale experiment should not be tried. It would be difficult to believe that the dramatic fall of the curve of lobar pneumonia in the years following 1912 was an epidemiological phenomenon independent of prophylactic vaccination; but should a controlled test on a rising curve show that vaccines have but little effect, the whole question will have to be reopened, since the expense involved must be considerable. The stumbling-block against the acceptance of the efficacy of vaccination has always been the fact that an attack of pneumonia confers no immunity, but the apparent success of inoculation in South Africa has been an argument difficult to controvert. The Transvaal mine medical officers have now an opportunity to devise a series of crucial tests which should provide definite evidence for or against the value of prophylactic inoculation against pneumonia.

[1] THE LANCET, 1919, ii., 984.

[2] Journal of the Medical Association of South Africa (B.M.A.), June 9th, p. 309.

OCULAR MUSCLE BALANCE IN FLYING MEN.

THE successful handling of aircraft makes a big demand on visual acuity and balance. In examining pilots for flying aptitude, consideration was given mainly to visual acuity until it became established that "fast landers" almost uniformly possessed good visual judgment, whereas a large percentage of those who could not land manifested defective visual judgment. This led to tests for visual judgment being added to the usual routine ophthalmic examination. The tests deemed sufficient to expose the presence of muscle imbalance in flying personnel are set out on pp. 141 ff. of the Manual for Medical Officers of the Royal Air Force.[1] They include: (*a*) the convergence test; (*b*) the cover test; (*c*) the red-green (phorometer) test; (*d*) the Bishop-Harman diagram test. A typical case of poor response to the four tests mentioned would be one in which: (*a*) the convergence near point is over 4 in.; (*b*) the cover test reveals "neglect" or suppression in the case of the covered eye, so that it either failed to take up fixation or reacted in a very sluggish manner after being uncovered; (*c*) there is a separation of four or more inches (1–2 prism dioptres) between the superimposed red and green lights at 20 ft. or a marked hyperphoria; (*d*) a diaphragm result of four or worse (normal 0–1). Subjects with muscle imbalance, practically without exception, take a time considerably over normal before they learn to land—some, indeed, never learn to land at all. Those who show a tendency to exophoria flatten their machines out too early; those with esophoria are inclined to flatten out too late, and fly into the ground. These defects are naturally the more accentuated the faster the landing speed of the machine. That defective visual judgment, as demonstrated by the tests described, is actually the cause of many landing troubles has been amply proved by the effects of visual training, both on those pupils who had failed to qualify, or who were indifferent pilots when qualified, and on those pilots who concomitantly with disease or accident had developed ocular muscular defects. Visual training carried out either by means of Worth's amblyoscope alone, or combined with the stereoscope, as demanded by the type of case, has proved of great value. It is stated that pilots who were a trial to their instructors, and a source of danger to themselves, have, after successful training, not only developed into sound flyers, but have, in a number of instances, become well known as instructors at flying schools. Exceptions naturally arise from time to time as, for example, when a man has superimposed handicaps such as lack of flying temperament or inability to perform the fine coördinated movements inseparable from modern light machine flying. It appears that the most simple cases are those of pure exophoria which are found in pilots who: (*a*) had a tendency towards this condition on entry not sufficient to warrant rejection; (*b*) suffered from some illness, such as influenza, malaria, sandfly fever, or became gradually debilitated from tropical service; or (*c*) suffered from cerebral concussion after some accident. Types (*a*) and (*b*) require training for their correction; type (*c*) shows, in some instances, a remarkable power of righting with time unless the continued irritation of a diplopia has produced the monocular habit as a way of escape. Less simple are the esophorias, whether of the usual form with hypermetropia as a basis, or the so-called pseudo-esophoria of spasmodic character, produced sometimes by sun-glare, sometimes as a subconscious means of mastering the inroad of a mild exophoria. This condition raises the problem of the irregular control of nerve impulses, and it is open to controversy how it is acquired. An interesting type is that in which the "neglect" or "suppression" factor is predominant either as "monocular neglect" or "alternating neglect." In the first instance, one eye receives and registers continual impressions while the other registers impressions irregularly; in the second, one eye functions for a time and then gives way entirely to the other, and so on. The pilot with "alternating neglect" tends to fly his machine after the zigzag fashion of the snipe. In training these cases the "neglect" factor must first be dealt with if satisfactory results are to be obtained. Finally, there are a few pilots of the war school who possess only one useful eye. They have either lost the use of one eye in infancy and have acquired the "monocular sense," or have been spared the "master eye," and then fly, as it were, along a "memory sagittal line." There is much else of interest in the Manual; we have selected for comment a subject of immediate topical interest.

[1] Air Publication, 1269. H.M. Stat. Office. 3*s*. 6*d*.

BOARD OR DEPARTMENT ?

THE Reorganisation of Offices (Scotland) Bill, which is likely to become law before Parliament rises for the vacation, proposes to substitute Departments for Boards in the administration of health, agriculture, and prisons north of the Tweed. The Bill has other miscellaneous provisions relating to certain ancient legal offices, but the proposed changes in the constitution of the Scottish Board of Health and the Board of Agriculture for Scotland are those which have attracted the main attention. As in the similar Bill of 1924, they involve deleting the requirement that two medical practitioners, one or more women, and one practising lawyer shall be statutory members of the body administering health services in Scotland. These alterations will chiefly be viewed from three aspects. There is first the personal view, important enough to those whom it immediately concerns but liable to be overlooked by others—the view of particular officials whose prospects of promotion or superannuation may be affected. Next there is the wider view, suffused with the warm atmosphere of local patriotism—the view of those Scots who are satisfied with the institutions they have got and who are distrustful of any movement which may threaten the freedom of national contacts or may place some college-bred theoretically minded officialism above the native common sense and practical ability of Scotland. Finally, and at a marked disadvantage in popular support, there is the cold official aspect of a superior efficiency in administration, an impersonal abstraction associated perhaps in the all-seeing eye of the Treasury with some future prospect of economy or of a more perfectly standardised civil service free from any element of local patronage. The government of Scotland has its peculiarities and anomalies. By reason of the undeniable supremacy of the Parliament at Westminster there must be some minister in London—sometimes named the Secretary for Scotland, at other times (as now) one of His Majesty's principal Secretaries of State, specially charged with Scottish affairs—to answer for the conduct of Scottish government. Simultaneously the actual work of administration must be conducted at Edinburgh or elsewhere in Scotland by officers who have first hand acquaintance with the problems of that work. Thus there has been evolved at Dover House (the Scottish Office in Whitehall) a sort of post office or clearing house, an institution which would break down at any moment if it were not operated with remarkable competence and almost exclusively by a Scottish personnel. The Secretary of State has to consult the branches of Scottish administration in the north. He naturally knows it to be easier to communicate with a single official, the carefully selected head of a department, than to take the opinions and recommendations of the several members of a board which may not be unanimous. The board's advice may be a compromise, or the minister may have to adjudicate between the dissenting voices of majority and minority, and he knows that a collective mind is made up more slowly than that of a single individual.

There, then, is the issue. Is the Secretary of State to consult one person or many ? Is he to deal with a super-civil servant or with a group of possibly independent advisers ? If he listens to the expert administrator, will there not be a tendency to override or

exclude the technical expert in health, housing, or agriculture? The Scottish Members of Parliament who object to the Bill have pointed out that there is no allegation of existing inefficiency; they have specially praised the administration of the boards which deal with health, agriculture, and prisons; they maintain that the proposals mean the denationalisation of Scotland and will hasten the advent of home rule. On this wider issue of autonomy and national sentiment Scotland will find support from the Welsh Members of Parliament who have lately been protesting against the proposed reorganisation of the Welsh Board of Health. To the latter the Minister of Health has replied that the abolition of a chairman and the reduction of the Welsh Board from four to three members is not part of a policy of denationalisation; the Board has not been an executive body; it has met not more than 28 times in the past nine years; its work is done by individual members in their individual capacities; the present change is a matter of internal administration only, a question of personal arrangements. This question of personal arrangements arises also in the Scottish proposals. The existence or the near prospect of certain vacancies has caused the administrative changes to be pressed forward now at a moment when they can most smoothly be effected. Sir John Gilmour appears to have given some kind of assurance that he will hold himself as accessible to his technical advisers as heretofore, though he frankly maintains that experts must be controlled. We do not, he observed, allow the military and naval experts to carry out all they desire. Similarly, "if the medical man had his way, he might possibly impose upon Parliament and the country a system eminently desirable no doubt but so extravagant or so much in advance of the time that Parliament could not tolerate it." Sir John Gilmour's best argument is that every inquiry and commission which has examined the science of administration has recommended the change he proposes. England has a Board of Admiralty and a Board of Inland Revenue; she has a Board of Trade (of which the Archbishop of Canterbury is a member amongst others), but fortunately this Board can act with a quorum of one member. Apart from these instances, this country has usually adopted the system of ministries and departments, administered under a single permanent head, and in recent years Northern Ireland has found it worth while to copy the same model. Board or Department—it is not the label that matters but the sympathetic intelligence which the Scottish Office will no doubt continue to supply.

INDICAN IN THE BLOOD.

IN 1924 C. H. Andrewes described in our columns [1] a new colour reaction which occurred on adding van den Bergh's diazo-reagent to the serum of patients with uræmia. His observations have been confirmed by other workers, and the test has been found of use in helping to diagnose the condition of renal failure. Andrewes failed to discover the nature of the substance which gave this reaction, but recently G. A. Harrison and R. J. Bromfield have shown [2] that the colour is given by an indoxyl compound presumed to be indican, which is potassium-indoxyl-sulphate. Indoxyl is formed in the body from tryptophane, one of the principal amino-acids in the protein molecule. The amount of indoxyl which is formed depends partly on the quantity and nature of the protein which is eaten, partly on the nature of the bacterial flora of the intestines. The indoxyl which is absorbed from the intestines combines (in the liver) with sulphuric acid, and the resulting indican is then passed on into the blood. If the kidneys are functioning properly, the amount of indican circulating in the blood is very small as it is excreted in the urine. The amount in the blood depends on four factors—namely, the quantity of tryptophane in the diet, the nature of the bacterial flora, the efficiency of the liver, and the efficiency of the kidneys. It has been found that the diazo-colour reaction runs roughly parallel with the concentration of urea and creatinine in the blood of uræmic patients, although the test occasionally proves negative. F. S. Patch and I. M. Rabinowitch [3] claim that in urological cases the diazo-test enables them to judge whether the excess of urea is of serious importance or not. This claim may have to be reconsidered now that the cause of the colour reaction is known to be indican, since in spite of gross renal damage, indican may not be present in excess in the blood owing to the failure of one of the factors necessary for its formation. Harrison and Bromfield are to be congratulated on their success in elucidating the cause of a colour reaction given by so complex a fluid as blood.

[1] THE LANCET, 1924, i., 590.
[2] Biochemical Journal, 1928, xxii., 43.

A FORGOTTEN RED CROSS PIONEER.

THE recent centenary celebration of the birth of Henri Dunant has stimulated the memory of Ferdinando Palasciano, surgeon to the army of the Neapolitan Bourbons, and his courageous advocacy of mercy to the wounded on the field of battle. From an account of his career by Prof. Cesare Baduel, director of the Italian Red Cross, we learn that Palasciano was early conscious of his responsibilities to soldiers, not only when they were effective combatants, but also when they were suffering and abandoned on the field of battle. At the present time it reads strange that, during the Sicilian insurrection against Bourbon rule in 1848, General Filangieri, who was besieging Messina, gave orders that no quarter was to be given to the enemy. Palasciano disregarded these orders and cared for the wounded of both sides. For this act of insubordination he was threatened with death, and he had to spend a year in prison as a reward for his clemency. Filangieri's persecution of Palasciano would doubtless have been more brutal had not King Ferdinand known him personally and valued him both as a man and as a scientist. In January, 1861, he offered to the Accademia Pontaniana at Naples a prize of 100 ducats for the best 100 rules of military surgery for the treatment of gunshot wounds. The prize was not awarded at first, but it was won some time later by Dr. Appia, of Geneva, and the Italian, De Vita. In connexion with this competition Palasciano declared before the Accademia Pontaniana that "belligerent powers, in their declaration of war, must recognise reciprocally the principle of the neutrality of the wounded and seriously ill, for the entire period of their treatment.' He insisted that the principle of the neutrality of the wounded should be accepted, either by the ruling of an international congress, or by a special agreement between the belligerent powers inserted in the declaration of war. Five of his points were (1) That the armies should be obliged to exchange wounded prisoners immediately after a battle. (2) All soldiers who were too severely wounded to be transported should be treated on the field of battle by the army's own sanitary service. (3) A sanitary staff sufficient to care for wounded men in hostile territory should be given a safe conduct and escort, and be allowed to remain until their task was finished, when during a truce, the personnel could return to their own advanced post or to the frontier of the enemy's country. (4) All necessary food, lodging, and drugs should be provided by the Commissariat on the signature of the attending surgeons and on the assumption that reimbursement should be effected after the war. (5) In the case of sieges, and in addition to the exchange of the wounded, the besieged army should be allowed to send its wounded to any neutral country willing to receive them if the besieging army would not do so. In 1862 Henri Dunant published his "Souvenir de Solferino," which did so much to pave the way for the international conference of 1863. The International Convention, signed in August of the following year, neglected the fate o

[3] Jour. Amer. Med. Assoc., 1928, xc., 1092.

wounded men in naval battles. Palasciano insisted on the importance of this omission and appealed to the Italian Government to call another conference. The governments interested having come to an agreement, the Swiss Federal Council held another conference at Geneva in 1868. Palasciano did not attend it, but the amendments which he advocated to the Convention were adopted. He died on Nov. 28th, 1891, and was buried in the ground reserved for eminent men in the cemetery of Poggioreale at Naples.

ULTRA-VIOLET LIGHT APPLIED TO DISEASES OF THE EYE.

FROM the Ultra-violet Light Clinic, established at the Royal London Ophthalmic Hospital in the autumn of 1925, some interesting results are reported by Dr. W. S. Duke-Elder.[1] The 425 cases treated up to July, 1927, are classed into those in which general sun-baths were given and those in which the rays were applied directly to the eye. The number treated by general light baths was 306. Of these, roughly, one-third were cases of iritis and irido-cyclitis, one-third of phlyctenular keratitis, and the remainder of other diseases. The chief interest of the report lies in the cases of chronic and intractable iritis and irido-cyclitis, which have been treated without success for periods of months or years by all the known methods of therapy and which have responded well to the ray treatment. Of 76 cases of infective irido-cyclitis treated, 38, or just half, were cured, 30 showed more or less improvement, and only eight showed none. An eye, which has been the seat of active inflammation for many months, may well become quiet. On the other hand, gross structural changes are as unalterable under this as under any other treatment. Of 16 cases of choroiditis treated, the infective and the tuberculous cases did well, especially cases with persistently recurring lesions. Syphilitic cases did not respond to the treatment. Cases of scleritis and sclero-keratitis did well, and cases of phlyctenular keratitis, including extremely chronic relapsing cases, did best of all. Light may be considered almost a specific for this disease. The same may be said of obstinate blepharo-conjunctivitis occurring in debilitated patients. Duke-Elder's conclusion is that with judicious use the effects of ultra-violet light can be powerful for good, but they have their limitations and they always stop short of the marvellous. The main danger to be guarded against is over-dosage, and some patients may display an idiosyncrasy and develop symptoms of over-dosage, even while the exposures are kept well within the limits ordinarily safe. Care in this respect is especially to be insisted on in the case of patients with low blood pressure. Pyrexia is usually a contra-indication and care must be taken during menstrual periods. With regard to special effects on the skin and the eye, there is the danger of burns from excessive doses and of cataract, which must always be guarded against by the wearing of protective glasses. Direct radiation of the eye was used in 119 cases. This method involves real danger of producing cataract unless the most elaborate precautions are taken, and Duke-Elder has only employed it by means of a special ophthalmic radiation lamp, by which the desired rays are filtered off from the rest and focused accurately on the desired depth. Hence the method is only applicable for the cornea, sclera and conjunctiva, and theoretically, perhaps, with a very obliquely directed radiation, the anterior surface of the iris. Actually, of 119 cases so treated, 99 were infections of the cornea and sclerotic, 20 of varying types of conjunctivitis. All types of corneal ulcer did well, but the rays were powerless to influence the resulting scars. A few cases of hypopyon ulcer were treated, mostly along with general light baths. Phlyctenular ulcers do so well with general light baths that it is rarely necessary to employ the local treatment in addition. A few cases of chronic conjunctivitis, chronic blepharitis, and trachoma were treated with benefit. In these cases the reaction is not so easily produced as in the skin, and much longer exposures were necessary. These papers, together with the recent symposium on the subject at the Oxford Ophthalmological Congress, do much to establish the claim of ultra-violet therapy to be a new method of great promise, but they also emphasise the existence of dangers and the necessity of entrusting the administration of the remedy to specially skilled hands alone.

[1] British Journal of Ophthalmology, June and July, 1928.

TRAFFIC IN NARCOTIC DRUGS.

IMPORTANT information in regard to measures for the international control of the traffic in drugs of addiction was vouchsafed in the last report made to the Council of the League of Nations by the Advisory Committee dealing with that subject. It seems probable that the Opium Convention, signed at Geneva in February, 1925, which was intended to provide a central control board and thereby strengthen Chapter III. of The Hague Opium Convention of 1912, may become operative by the end of the present year. The Convention of 1925 was the outcome of the prolonged and acrimonious "Second Conference" at Geneva in 1924–25, from which the American and Chinese delegates felt compelled to withdraw. By its articles it could not come into force until ratified by ten of the Signatory Powers, including seven of the States represented on the Council of the League of which two must have permanent seats on that body. The Advisory Committee, in its last report, stated that 15 States in all had then ratified, including four which are members of the Council, two of them, Great Britain and France, being permanent members. It is anticipated that Canada, Japan, Netherlands, Switzerland, and Roumania will shortly deposit their instruments of ratification, and thus the requisite conditions for putting the Convention of 1925 into operation will have been achieved.

It is hoped by the Advisory Committee that when the Central Control Board, as provided by the Convention is set up, the highly unsatisfactory position of the illicit traffic in dangerous drugs, described as "enormous," will be checked. The report states that—

> "the seizures effected in various countries, particularly in the Far East, still represent considerable quantities; a return—incomplete owing to the inaccuracy of the figures given for certain seizures and relating to a period of about 18 months—shows the striking figures of 2320 kilogrammes for cocaine, 1600 kilogrammes for morphine, and 1150 kilogrammes for heroin, quite apart from a considerable number of seizures of which no precise details are given, but which represent totals perhaps as large as those given above. Moreover, it must not be forgotten that the largest proportion of the narcotics illicitly distributed escapes seizure."

The Committee are at a loss to know the sources from which the illicit traffickers draw their supplies of morphine and of the opium from which the alkaloid is derived.

It will be remembered that M. Zahle, the President of the Conference which drafted the Geneva Convention of 1925, stated that:—

> "if manufacture and transit (of drugs) have been well cared for, the same cannot be claimed for production. The American principle for a limitation of production to medical and scientific purposes, though accepted as a principle by the Advisory Committee on the traffic in opium and the Assembly, has not been included in the Convention as a contractual obligation," and "similarly only a limited progress can be claimed as regards the smoking of opium in certain Pacific countries."

It was omission to deal adequately with these aspects of the problem that led to the withdrawal from the Geneva Conference of the American and Chinese delegates, since they regarded the new agreements as derogating from the spirit and true intent of The Hague Opium Convention of 1912. While it is to be hoped that the expectations of the Advisory Committee, based on the coming into operation of the

1925 Convention, may be realised, the larger question of the production of the raw material of the drugs in question remains to be dealt with, and is complicated by the fact that such producing countries as Turkey and Russia are outside the League, while other producing countries like Persia,[1] Greece, Bolivia, and Peru have not seen their way to supply the information asked for by the Committee.

FRONTIER NURSING IN KENTUCKY.

THE pages of THE LANCET open to-day with an address which Sir Leslie Mackenzie, until recently the Medical Member of the Scottish Board of Health, delivered in circumstances of wide medical importance, as well as of personal interest to the orator. The occasion was the dedication of a hospital and nursing centre, established by the Frontier Nursing Service of Kentucky in the eastern and mountainous regions of the State. The hospital is to serve as a main focus in an organisation for the prevention of disease and the maintenance and promotion of health in certain thinly peopled areas, which present a great similarity to the Highlands and Islands of Scotland in respect of the conditions which have to be met in providing medical service. And while the problems are similar, the methods of dealing with them are also similar, for the excellent reason that Mrs. Mary Breckinridge, the inspiring pioneer of the American work, commenced her task with a personal investigation in Scotland of the way in which the State and individual workers had dealt with the difficulties of the medical service in the Highlands and Islands. This Scottish area, as defined by statute, has a population of but 320,000 scattered over 10 million acres, either isolated by the sea or intersected by mountains and rivers which are impassable in many seasonal conditions. It is true that there is no marine peril connected with the medical service in Kentucky, but the mountains and rivers are there, and so are the scanty and poor inhabitants; and those responsible for the Scottish work may well be proud that their labours have found echo in the far West. We may hope that the activities in America will be attended with less practical difficulties than were those in Scotland through many long years of effort. The difficulties of transport and the needs of the two populations, though varying in detail, may be the same in significance, but the problems present in the scattered regions of the north of Scotland were much complicated by historic, racial and social differences which made any processes of amalgamation, for any purpose however worthy, extremely difficult of accomplishment. These things Sir Leslie Mackenzie sets out with the eloquence of one who not only was the leading spirit in dealing with them, but was born in the middle of them and knows their reality. Because of his intimate and personal knowledge both of the plight in which his humbler fellow-countrymen were, and of the great qualities demanded of those who undertook to minister to their medical needs, Sir Leslie, throughout his whole official career was a valuable servant of the State, of humanity, and of his calling. Therefore, he takes with him into retirement the thanks of all for what he has done, something of which is indicated modestly in his message to the Frontier Nursing Service of Kentucky.

THE MODERN VIEW OF EPILEPSY.

SUPERFICIAL observers are apt to remark that in spite of a vast amount of research we are as far as ever from understanding the cause of epilepsy. Those, however, who have personal experience of research in this disease know that such a statement betokens a lack of appreciation of the nature of the problem to be solved and hence of the means by which its solution will be accomplished. A military metaphor may here prove illuminating. In trench warfare an advance by one side can only occur after the preparation of vast quantities of munitions and a barrage by which the enemy's defences are broken down, but during this essential preliminary stage the position of the combatant lines remains unchanged. In the assault on epilepsy there is reason to hope that we are witnessing the preparatory barrage, and that though the lines at present remain stationary, much valuable work is being accomplished which is an essential preliminary to a true advance of knowledge. Reflections such as these are provoked by Dr. W. G. Lennox and Dr. Stanley Cobb's admirable review [1] of recent work on the condition. The authors confine themselves to the consideration of the mechanism involved in seizures, and the cause and treatment of epilepsy, rightly emphasising at the outset that epilepsy is a symptom and not itself a disease. The various physiological theories of the nature of a convulsion are critically examined, and the conclusion reached that no single theory can hold the field to the exclusion of the others. Considerable space is devoted to the pathological changes in the brain and elsewhere, which have been held to be related to epilepsy, but little stress is laid upon these. Much recent investigation of epilepsy has been biochemical, and about one-third of the review is a survey of this field, dealing especially with the significance of disturbances of acid-base equilibrium. Treatment is discussed, including starvation and a ketogenic diet. The number of references quoted is about 500, and Dr. Lennox and Dr. Cobb bring to bear upon this mass of material a judgment which is both critical and constructive, being based upon a wide personal experience of the clinical, experimental and biochemical investigation of epilepsy. Their conclusion may be summarised in their own words: "the hope for an understanding of convulsions lies in a knowledge of the factors which affect the reactive capacity of nerve cells," and it is the multiplicity of such factors which renders the problem of epilepsy so complex and necessitates many and varied modes of approach. They are to be congratulated upon a work which will be a necessity to investigators of convulsive states and of practical value to all who have to deal with epileptic patients.

FASCIAL GRAFTING.

THE laws governing the transplantation of tissues are more or less known; it has been proved over and over again that grafting of fibrous tissue, if infection be prevented, is almost certain to be a success. But this knowledge does not seem to have been exploited to the degree its importance warrants. How far reaching is the use of fascial grafting methods is brought home to the reader of two recent books by Dr. Ernst König,[2] in Germany, and by Mr. H. C. Orrin,[3] in this country. In human surgery the fascial investment of the thigh has been chiefly used. It is convenient to obtain, and its removal does not lead to any detectable disability; it is of different thicknesses in its different parts, and is thus suited to various purposes; it can get its nourishment from the tissue juices which exude from the bed in which it is placed; it heals in and maintains its own proper structure; it does not shrink, and when subjected to strain it increases in strength. A simple enumeration of the uses to which it has been put will show how many and diverse are the conditions amenable to treatment by fascial grafting. Defects in tendon can be remedied in a way possible with no material which does not become an integral part of the organism; tendon sheaths can be replaced, and deformity resulting from a paralysed muscle can often be in part overcome by a transplant. Fascia can be used as a covering for the ends of bones in an arthroplasty or for winding round a nerve after suture; it is the best material for closing the aperture through which a large hernia has come; it has been used for

[1] See THE LANCET, 1928, i., 457.

[1] Medicine, vol. vii., No. 2, May, 1928. Williams and Wilkins Company, Baltimore. (London agents: Baillière, Tindall and Cox, 8, Henrietta-street, W.C.)

[2] Die körpereigene freie Fascien-Verplanzung. 1928. Berlin: Urban and Schwarzenberg. Pp. 302. M.20.

[3] Fascial Grafting in Principle and Practice. 1928. Edinburgh: Oliver and Boyd. Pp. 92. 7s. 6d.

the fixation of dropped organs and for closing defects in the dura mater, and it can even be grafted into a hole in the wall of a hollow viscus. In some of these operations success is the rule, but in others it cannot be assured as yet. Further study will determine the conditions essential for a favourable outcome; nevertheless, much knowledge has already been gained, and the way has been pointed out for future inquiry into a method which has already proved to be a valuable asset in the hands of the general surgeon.

HEALTH CONGRESS AT PLYMOUTH.

SOME 850 delegates, including representatives of the Home Government, the Governments of India and the Dominions and of foreign countries, and a large number of members, making up a total of about 1500 persons, have assembled for the thirty-ninth Congress of the Royal Sanitary Institute, which bids fair to equal in success any of its predecessors. The Bishop of Plymouth preached at a special service in St. Andrew's Church on Sunday morning and the Rev. T. Wilkinson Riddle at George-street Baptist Chapel in the evening. On Monday the members and delegates were welcomed by the Mayor (Councillor W. H. J. Priest), who later opened the Health Exhibition at the Drill Hall. At 5 P.M. the inaugural meeting of the Congress was held in the Guildhall, when Prof. Bostock Hill, chairman of the council, in inducting the President, the Right Hon. Viscount Astor, referred to the many outstanding services which he had rendered to the advancement of hygiene, notably with respect to the fight against tuberculosis, the improvement of the milk-supply, and maternity and child welfare. Lord Astor's presidential address was an extremely interesting survey of the whole problem, but was much more in that it contained many suggestions and expressions of opinion likely to stimulate discussion when the meetings of the sections and conferences take place. Parliament, he said, had tackled the smoke nuisance in a timid manner, and he hoped some day they would be bold enough to deal with the domestic chimney. Our greater use of water might make it necessary to appoint, even at this late period, conservancy boards for all our rivers. He deplored the effect on birds and possibly on fish from the pollution of the sea by oil from ships. He hoped the time was not distant when the buyer would know whether he was buying raw or pasteurised, clean or dirty milk. He welcomed the more important status given to veterinary hygiene. He referred to the great benefit likely to accrue to industrial hygiene from the work of the International Labour Office at Geneva, the first section of the League of Nation's headquarters to become a going concern. After referring to the lamentably high maternal mortality and morbidity from childbirth, he expressed his views on the right and the wrong kinds of birth control. In urging the imperative need for the preservation of the beauty of the countryside, he suggested that local authorities should plan for new villages and try to keep the intervening spaces open. Practical schemes were possible by which owners of land deprived of building value could be compensated from the increased value of land that is developed. He expressed his disapproval of the recent proposal for the compulsory detention and treatment of men and women suffering from venereal disease. Regulations based on a low conception of human morality could not accelerate physical or moral progress. His concluding note was on the interrelationship of rest, harmony, and health, and a plea for a daily brief period of rejuvenating peace and constructive silence to counteract the excessive restlessness of modern existence. In moving a vote of thanks to Lord Astor, Mr. Ramsay MacDonald referred to the last portion of the address as "crammed full of shining wisdom." In this period of extraordinary evolution of science and power, it was very necessary that there should be some guiding principles, and that we should take stock and "consider the end of it all."

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXXV.

TREATMENT OF ACUTE AND CHRONIC LARYNGITIS.

ACUTE laryngitis is usually the result of an acute infection of the upper respiratory tract, a "cold," tonsillitis, influenza, or, in children especially, one of the exanthemata, notably measles. It is sometimes traumatic, due to inhalation of dust, irritating gases or fumes, or the accidental swallowing of caustic or very hot fluids; this latter accident occurs when children drink from a kettle.

Acute Laryngitis in Adults.

The treatment of acute laryngitis in adults presents a somewhat different problem from the treatment of a similar condition in infants. The adult patient should be kept in an even temperature, preferably in bed, and should be encouraged to drink large quantities of warm fluids. He may be given drugs to promote perspiration and to ensure rest—for example, aspirin grs. x., Dover's powder grs. viii. at night. Inhalations of steam impregnated with tinct. benzoin co., pine oil, or eucalyptus oil, every three or four hours for a quarter of an hour will be most useful. Abstinence from alcohol and smoking should be enjoined. Rest of the voice is important. Should cough be a prominent symptom a mixture containing small doses of heroin may be given. The attack usually subsides in a few days; the voice becomes normal, cough and secretion disappear. In rare cases œdema of the tissues over the arytenoid cartilages and of the aryepiglottic folds occurs. This results in dyspnœa of variable degree; it may be so severe as to demand tracheotomy. Should such a complication occur it is well to give antistreptococcal serum (25 c.cm.) subcutaneously, and a further dose the next day. Scarification of the œdematous areas has been advocated.

Acute Laryngitis in Infants.

Owing to the relatively small glottis, acute laryngitis in infants is apt to be more serious than in adults. Inspiratory obstruction is especially to be feared. It is essential to exclude diphtheria as the cause in a case of acute laryngitis. Diphtheria of the larynx is almost invariably accompanied by diphtheria of the pharynx, and will show itself by the presence of the typical greyish-white membrane on the tonsils and on the anterior pillars of the fauces or uvula; in all cases of doubt swabs should be taken from the pharynx. If the clinical examination give rise even to suspicion of diphtheria, the case must be given the appropriate dose of antidiphtheritic serum—for a child of 6, 8000 units, for a child of 12, 10,000 units—without waiting for the bacteriological report.

The general principles of the treatment outlined above must be adhered to for catarrhal laryngitis. Rest in bed in an even temperature is important, and since the child may not be able to inhale, a steam kettle should be used. Perhaps the most useful drug for children is chloral. It is of value mainly in ensuring rest, physical and mental, and in allaying the alarm that stridor produces; often merely keeping a child drowsy will enable tracheotomy to be avoided. Inhalation of oxygen through a nasal tube will be helpful. On the other hand, tracheotomy must not be too long postponed, since the child's heart will not tolerate too long the strain of dyspnœa; the patient's colour, the amount of "sucking-in," and the pulse must be considered in deciding on the necessity for tracheotomy or intubation.

Another disease that may be mistaken for laryngitis is laryngismus stridulus; this condition is one seen in rickety children, often associated with adenoids; attacks come on suddenly, generally

at night, when the child wakes in distress with inspiratory crowing. The history of previous attacks, the absence of local pharyngeal signs of inflammation, and the type of child will help in arriving at a diagnosis. Retropharyngeal abscess, especially if low down at the level of the epiglottis, gives rise to dyspnœa; inspection with a good light from a forehead mirror or better, palpation with the finger will reveal a swelling of the pharyngeal wall and decide the diagnosis.

Recurrent Cases.

Should acute catarrhal laryngitis recur, predisposing factors must be sought in the upper respiratory tract and, if possible, removed. Any cause of nasal obstruction, especially a deflected septum, large middle turbinals or adenoids should be excluded; also foci of infection, suppuration in the accessory nasal sinuses, and inflamed adenoids or tonsils.

Chronic Laryngitis.

Chronic laryngitis may be the result of attacks of acute laryngitis; in this case it is all the more important to search for and remove the predisposing causes enumerated above. Treatment of the condition itself is partly general and partly local. Rest of the voice is essential. Faulty methods of voice production in singers or speakers should be corrected, and abstinence from alcohol and tobacco enjoined. A mixture containing potassium iodid grs. iii., pot. nitrate grs. x., oxymel ʒii., tinc. camp. co. ℥xxx., and extract ipecacuanha liq. ℥i. is useful. Locally, in established cases, painting the cords with a solution of zinc chloride (grs. xv. or grs. xx. to ʒi.) daily might be tried. In all cases of chronic laryngitis it is essential to exclude the possibility of tubercle by expert examination of the chest and sputum.

Syphilis as a cause must be excluded by a Wassermann test.

Atrophic Rhinitis.—There are one or two varieties of chronic laryngitis which call for special treatment—for example, that due to or secondary to atrophic rhinitis. Even vigorous treatment of the nose, set out below, may fail to cure the laryngeal disease, but should be patiently undertaken; the nose is to be syringed twice daily by means of a Higginson's syringe with a pint of normal saline, to which is added ʒss. of carbolic acid 1 in 20—this will wash away crusts and keep the nasal passages clean.

Singer's nodules consist of small projections from the edges of the vocal cords at the junction of the anterior and middle thirds. Over-use or mis-use of the voice may be the cause, and must therefore be corrected. Failing this the nodes may be touched with the galvano cautery; this can be done by means of a specially shaped cautery point after painting the larynx with cocaine.

Pachydermia laryngis is a very resistant form of chronic laryngitis, in which there are projections in the posterior commissure or posterior parts of the cords. Removal of these projections has been practised in various ways with poor result. Recently, however, a degree of success has been obtained by the judicious use of diathermy (Kisch); under chloroform anæsthesia two or three punctures are made into the projections with a fine diathermy needle, and very considerable improvement has followed.

Tuberculous laryngitis is always a serious complication of phthisis, and the prognosis grave. Strict silence over a period up to three months will cure slight cases, when combined with general open-air treatment. More serious advanced cases may be arrested by the same means. Should the lung affection clear up local treatment of laryngeal swellings by galvano-cautery puncture under local anæsthesia is very useful. Advanced cases, in which pain is the prominent symptom, must be treated symptomatically by means of local insufflation of orthoform and anæsthesia.

W. M. MOLLISON, C.B.E., M.Chir.,
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Special Articles.

ON THE NEED FOR STANDARDISATION IN CLINICAL PATHOLOGY.

The Opening Address to the Association of British Pathologists.

BY SIR THOMAS HORDER, BART., M.D. LOND.

DOUBT has been expressed in certain quarters as to the need for this Association. I have myself no doubts whatever on this score. In every branch of medicine there must of necessity be an academic side and a practical side. In anatomy, in physiology, in physics, in chemistry, there are men working out particular problems of an academic kind which, though they have a possible bearing, direct or indirect, upon the diagnosis and the treatment of disease, yet are conceived in a purely academic spirit and are pursued for their own sake and not as direct aids to the prevention or the cure of disease. It is so also in pathology. I suppose we are all members of the Pathological Society of Great Britain and Ireland, and are interested in the more abstruse problems that chiefly form the business of that body. But the doctor in charge of the patient could get very little pathological help in the conduct of his cases were he dependent directly upon the activities of that Society, however energetic these may be. There needs a special acquaintance with the particular aspects of disease, and experience of the material derived from the patient and how best to deal with it, in order to supply that important information which supplements clinical medicine and makes it a whole, rather than a part, of the disease-picture. Clinical pathology requires that the objectives constantly kept in mind are the diagnosis and the treatment of the diseased patient. Here, too, time is the essence of the contract. Pure research may be followed leisurely; indeed, to follow it in any other way than deliberately and slowly is to invite failure. Clinical pathology demands promptness and concentration towards an immediate practical end; the individual's health, perhaps life, is at stake and this puts a limit to contemplativeness and abstraction. It is the application of pathological principles to practical medicine—it is not the discovery of those principles themselves—that we are concerned with.

The Unity of Pathology.

As to the importance of clinical pathology in our work as doctors it is no longer necessary to emphasise this. Time was when it was very necessary, and I am pleased to think that insistence upon the fact that the recent developments of medicine have been very largely in the direction of examining materials derived from the patient, rather than examination of the patient himself, is the fact to which I owe the honour of addressing you. This insistence, and the equal emphasis put upon the importance of preventing a divorce between pathology and clinical medicine, cover most of the small contributions which I personally can claim towards the progress of our science and art.

You will see, therefore, how reasonable it is that I should welcome the formation of this particular Association, consisting as it does of a body of men whose work lies very largely in this direction and—I speak quite deliberately—whose livelihood depends upon the important contributions made by them in their routine occupation towards the elucidation of the problem of the patient's disease and his treatment. I am quite certain that the Society has a great field and I predict for it a very successful future.

Inasmuch as we are really all of us both clinician *and* pathologists in spirit, though not in deed, I want to say a few things concerning matters that

affect both sides of that science which we study from two different angles. I refer to the science of Pathology. For it must not be forgotten that Pathology remains the science of disease, and to study it without coming a great deal into contact with the patient in whom the disease is being expressed, is to deal with only one set of data and to leave an equally important set unconsidered. I like to preach the unity of pathological processes, because there are still some who speak and act as though the whole thing can be seen and dealt with, either in the laboratory or at the bedside, whereas it requires a study of both aspects of the problem to achieve a satisfactory view.

The Doctor's Brief to the Pathologist.

For this reason it is of great importance that you should get as full a brief as possible from the doctor concerning the clinical features of the case in which help is asked. For the present unsatisfactory position in regard to this desideratum both parties are a little to blame. One fact which tends to obstruct this very necessary liaison is the existence of laboratories in which the personal element as between doctor and pathologist is quite eliminated. Materials are dumped in these places much as coals are dumped at our houses. I supposed such places are necessary; anyway they seem to have come to stay. I do not patronise them myself, because I am fortunate enough to be in frequent daily touch with colleagues working in pathological laboratories. But I am quite convinced, even apart from such facilities as I and all of us in large centres possess, that the commercialising of this part of our work is as bad for the patient and for us as it would be if clinical medicine were itself commercialised. When this matter is considered by the Association it might be well to hear the views of some practitioners. There is, by the way, another matter of policy which I suppose you will be discussing, and that is the vexed question of the supply of such therapeutic agents as vaccines from hospital centres. This is a large subject, and merits very full consideration before taking up a definite position. But I have no doubt that the Council, and the Association generally, realises the great importance of maintaining all the best traditions of our profession, and that they can be trusted to do this in connexion with these and with allied matters.

Again and again we see the futility of pathological work, and conclusions drawn from this, when it is a thing quite detached from the clinical aspects of the case. We are so familiar with this fact that to quote instances is superfluous. Recently a patient brought me her blood report. After detailing the figures and certain other observations the report stated that "this is most probably an anæmia of the Addisonian type in spite of the high Hb and low C.I. This group comprises P.A., sprue, and bothriocephalus anæmia. The eosinophilia, consisting of young eosinophils, makes the diagnosis of the last named tempting, though unlikely." Now as a matter of fact the patient had had her spleen removed six months ago, and was, at the time of this count, suffering from a severe attack of urticaria. Both of these facts were, of course, of the utmost significance, and in face of them the valiant efforts at explaining the blood picture became pathetically ludicrous when one saw the patient—a plethoric-looking woman with a red face, who has never been out of England.

This struggle to get farther than the data of the examination admit should be resisted, whether it be as regards diagnosis, or prognosis, or treatment. And since I have embarked upon the matter of pathological reports, with which, after all, my contact with clinical pathology is chiefly concerned in these days, I may as well say a few more things about them now they are in my mind.

The Logic of the Report.

It cannot too often be iterated that no amount of negative investigations ever establishes a positive diagnosis. At the most a negative report gives presumptive evidence against a certain condition or disease. In simple cases such as (say) the absence of a demonstration of T.B. in sputa, or of gonococci in urethral pus, we know how illogical it is to conclude that phthisis or gonorrhœa, respectively, is not present. Yet a more illogical conclusion is now and again perpetrated in the face of a set of negative data, more illogical because the tests conducted are relative tests and not absolute ones. I have more than once drawn attention to the occurrence of well-marked cases of typhoid and paratyphoid in which agglutinations are completely absent, and where the pathologist reports that this negative point excludes these diseases. Of course this is not so. But it not seldom happens that blood cultures, urine cultures, and even stool cultures also prove negative in such cases. When this is so, even pathologists of great experience are prone to consider themselves justified in excluding this group of infections, thus contravening a logical principle of a most primitive kind. The explanation of these cases is not at present forthcoming. It looks as though the present technique, thorough though it is, is not quite suited to them in some way. However this may be, I do, and not at all infrequently, see cases in which the clinical evidence of typhoid or paratyphoid—and I am often unable on clinical grounds to distinguish these infections with any degree of certainty—is quite indisputable; a definite incubation period, an ingravescent pyrexia, a relatively infrequent pulse-ratio, headache, epistaxis, enlarged spleen, leucopenia, patulous belly, rose-spots, defervescence by lysis, and even one or two relapses; yet the serum agglutination, and the most careful blood and stool cultures, may fail to yield any positive data. I have at home two pathological reports concerning such cases in which the sentence occurs: "Whatever this disease is, it is not in the T.A.B. group."

I am speaking on this point rather fully because it illustrates a principle to which I want to draw attention. There is in the minds of some pathologists an idea, never perhaps so baldly defined as I am now defining it, yet receiving frequent practical application, that facts ascertained in the laboratory have a different and a more trustworthy value than facts ascertained at the bedside. This seems to me to indicate lack of clear thinking. If a fact be clearly established it matters not in which sphere of observation it is found; nothing can make it less, or more, a fact. We all realise, of course, that the clinical expressions of disease are more difficult to interpret than those revealing themselves to the more exact methods of the laboratory, but there are fallacies of a special kind in laboratory work, and there is need for forbearance in the use of the microscope and the test-tube, just as much as there is in the use of clinical methods. In the last resort we are all reduced to the exercise of our own judgment and our reason, and we are all equally prone to fall victims to authority and our own preconceived ideas. In proportion as we do fall victims to these things the complexities of disease are certain, sooner or later, to humiliate us, and bring us back to fundamental principles.

The Final Test is the Patient.

What is the final test in all such difficulties of reasoning and experience? It must be the patient, of course, and what eventually happens to him. And only by maintaining a close liaison between clinical medicine and pathology can these doubts be settled. We are familiar with the expression "pathology as a help to clinical medicine." I was once bold enough to read a paper upon "Clinical Medicine as a Help to Pathology," and I should still like to commend this thought to the members of the British Pathologists' Association. There are still not enough consultations between clinicians and pathologists, and this refers both to hospital and to private practice. The bedrock of our work is the post-mortem room. It is there that our vanities get the shocks that are so good for them, but it is also there, I am glad to say, that our efforts get their best encouragement. We should see to it

that we all keep in close touch with post-mortem facilities.

Prolixity Confuses.

The prolixity of pathological reports is sometimes very confusing to the practitioner. He finds it difficult to distinguish between a mass of technique which is described in detail and the conclusions pertinent to the case. Perhaps I ought not to say that some reports that come my way seem to be written with a view to impressing the practitioner with the thoroughness of the laboratory work done, but this conclusion is at times hard to escape. The practitioner has confidence in the particular pathologist concerned or he would not invite his help; having confidence in him there is really no need to be told exactly how the material was dealt with at the bench, how dilutions were made, what stains were used, or how late into the night the pathologist sat up searching for some suspected microbe. Of course whenever a method, such as the use of a particular stain, or a special medium, has differential values, this should find a place in the report. I refer rather to matters that have only, as it were, domestic interest. I will couple with this type of report that other type, even more likely to give the practitioner mental indigestion, in which the non-essentials and the essentials are thrown together indiscriminately, or in which certain findings, the significance of which is at present quite unknown, are placed on a par with others the meaning of which *is* known. A good number of these reports are sent to me, or are shown to me, to be edited. I am asked what it all amounts to. When the wheat is sifted from the chaff there is very often left an exceedingly brief report, often entirely negative in respect of the paticular case.

The Premature Personal Bias.

This state of affairs is not seldom due to the fact that pathologists confuse the issue in the practitioner's mind by introducing matters which relate to particular researches of their own. And they do not make it clear, perhaps, that such things are still in the realm of research, and not in the realm of recognised facts. In other words, questions which should be brought before their colleagues of the academic body to which I have referred, and fought out there, are submitted to the ill-chosen judgment and very limited pathological knowledge of a doctor engaged in general practice. This seems to me to be inadvisable. It does not further the aims of the research, and it certainly confuses the issue in respect of the particular patient. Worse than this, after a time the pathologist comes to believe that a frequent reference to his pet idea really has proved his thesis to be of practical value, so that he begins to weave it into his laboratory routine as though it were generally accepted. I think there should certainly be as much forbearance exercised in this direction in pathology as in clinical medicine, especially in view of the fact that the reliance of the public upon methods of precision is so pathetically complete. If a man tells me that he knows my patient's liver is enlarged because he has employed a novel method of examination by which to reach this conclusion, I expect him first to have made good in regard to his thesis by a monograph brought before his colleagues in a suitable place, with the necessary healthy criticisms levelled at it, and that it shall have emerged as a recognised addition to clinical medicine. Otherwise I cannot, in the patient's interest, be responsible for accepting his statement. Surely the same sort of process should take place in respect of clinical pathology. And that clinical medicine does abound in all manner of ill-digested, and ill-assimilated, so-called methods is no reason why pathology should be similarly encumbered.

At present it is so encumbered. There are men who seem to be laws unto themselves in this respect; so that I can often tell who is the author of a report when it is read to me, because of the inclusion of one or more of these at present unaccepted criteria. I must not particularise, because that would be invidious. But it seems to me that just here is a very important part of this Society's work. In the title of my paper this evening I have used the word "standardisation," because I could not think of a better word, and anyway, it sufficiently expresses my meaning. Of course I do not mean that everybody should make his report, or the technique which leads to it, follow the same stereotyped plan; that would be to stultify individual effort and individual genius. There is a personal equation in these things, I am glad to say as in all others. One man will extract twice as much information as another from the same material, and present his data with twice as much lucidity. But I should like to plead for some greater uniformity in methods, in nomenclature, and in the criteria to be generally accepted in clinical pathology. Herein, as I say, there lies a great deal of very useful work for your Association.

The Pathologist's Brief to the Doctor.

I would begin this standardisation by teaching the practitioner exactly what it is by way of material that you want him to send you. And how best to obtain, how best to preserve and pack, and how best to forward this material to you. There will then be some degree of uniformity at this end of the investigation. There is still a great deal to be done in regard to blood examinations in this respect, and especially in regard to absolute cell counts and blood cultures. Of course, it is far better that the pathologist should obtain his own specimens first hand, and this should be encouraged whenever possible. But, unfortunately it is not always practicable to proceed in this ideal manner; distance and expense make it somewhat prohibitive. When this is so the pathologist should be very explicit about his instructions and should provide the doctor with the necessary facilities—appropriate bottles, pipettes, tubes, slides, and so forth.

In the case of stools one frequently sees very divergent reports in the same case, because of the widely varying conditions in which the specimens are taken; in one instance a piece of mucus is carefully selected and forwarded quickly; in another the pathologist receives a fragment of dried-up fæces which has taken quite a long time to reach him. There is still insufficient attention paid to the importance of urine being obtained by catheter; in women this is, of course, a vital necessity whenever bacteriological investigations are required. Doctors should be urged to pass the catheters themselves for this purpose; they generally leave the matter to a nurse, and she too often adopts the stupid method of performing this little operation by touch and not by sight, which is "walking by faith" with a vengeance on most occasions. The importance of filming sputa in respiratory diseases is a point to which I have often drawn attention. Most practitioners are unaware of the valuable information which the pathologist can give him from the examination of two or three films freshly and carefully made, especially in acute respiratory infections.

Biopsy should be performed much more often than it is. This refers especially to obscure cases of glandular enlargement. A point of importance here is that the gland removed under local anæsthesia be carefully chosen. The doctor, if left to himself, too often removes a small, hard, isolated gland, and this as often yields histological change that are residual only—fibrosis and changes that are common to more than one sort of infection. The best gland to remove is often a larger and softer gland, perhaps one of a group—one that promises to show active and specific histological features, and perhaps yield positive bacteriological results.

In many reports some comment should be made as to the nature of the material from the point of view of its likelihood to give helpful results. This is so in the tissues just mentioned. But it applies also to sputa and to other things. To report the absence of T.B. in material that is chiefly saliva, or chiefly blood has quite a different significance from a negative report in this respect obtained by the examination of a muco-purulent or caseous specimen. To us this

all very obvious; but it is not always obvious to many men who have not had opportunities for pathological work. When test-meals are given and the gastric contents are removed for analysis, a definite technique should be employed which follows a given standard as nearly as possible. Any special difficulty encountered should be noted, so that the test may be repeated, or caution entered as to the interpretation of the results.

Need for Standardisation in Methods.

When it comes to laboratory methods employed, a plea may again be urged for more standardisation. To speak of the bacteriology of the stools again, I feel that clinical pathology has hardly begun its work. The amount of confusion at present existing is very great, and for this reason hundreds of reports are quite useless. There is the question of the dilution of the stool, upon which quantitative results almost entirely depend. There is the question of the culture media used. There is the question of the time allowed for culture. Lastly, there is the question of the criteria of pathogenicity. I am aware, of course, of the present state of flux in regard to our knowledge of both the coliform and the streptococcal groups. But it seems to me to be far better and more helpful, during this state of half-knowledge, that the report should only record data which are co-related to established facts than that they should deal with debatable matters. Let me mention two instances, both of them having to do with pathogenicity. There is the question of "late lactose fermenters." I take it we are not yet in possession of enough facts to justify us in formulating a group of coliform organisms of certain pathogenic value under this heading. If we are not, I do not think a reference to these—unless it be accompanied by an explanatory note—is of service in practice. But if we are, then it is highly desirable that a definite time standard of the group should be employed by all pathologists—whether 48 hours or three days, or whatever a society like this determines for the time being. I see a good many reports, in which the term "serum-resisting coliform organisms" is used. But the connotation of the phrase is left very much to the imagination of the practitioner; he is often told that the presence of organisms justify this expression, is an indication for the use of a vaccine; but is there consensus of opinion that the reaction hinted at is proof of pathogenicity, and, if so, what are the limits of such reaction within which the use of antigen is really thought advisable?

These are only a few of the questions which have occurred to me in connexion with this subject. As you proceed with your work others will doubtless arise.

MEMORIAL FUND TO SIR DAWSON WILLIAMS.

SINCE the last list of subscribers was published in these pages, subscriptions have been received from the following:—

Dr. H. Adams and members of the Tyneside Branch of the B.M.A.; Dr. G. C. Anderson. Dr. J. Longheed Baskin (Thame). Dr. Ronald Canti (London); Dr. Cunningham (Whitley Bay). Dr. Douglas (St. Andrews). Dr. J. P. Gabb (Guildford). Dr. Phyllis Hall (North Shields). Dr. Herbert Jones (Bigbury-on-Sea). Lt.-Col. J. R. Lord (Epsom); C. L. Leipoldt, F.R.C.S. (South Africa). W. Harrison Martindale, Esq.; Dr. D. Martin (North Shields); Dr. J. Murray (North Shields). Dr. J. A. Nixon (Clifton); Mrs. D. G. C. Nixon (Clifton); Dr. C. Nelson (Earsdon). Dr. Rawson (Whitley Bay). Maj.-Gen. J. B. Smith, I.M.S. (ret.); Dr. H. Sainsbury (London). Dr. A. K. Towers (Wallsend-on-Tyne).

The Fund is now closed. The total number of subscribers is 400, and the total amount subscribed is £885 14*s*.

DARLINGTON GENERAL HOSPITAL.—The annual report states that the resources of the hospital were last year more severely taxed than ever, and it will have to be extended at a cost of close upon £50,000. Practically the whole of the resident staff have had to be lodged in premises separate from the hospital.

INTERNATIONAL CONFERENCE ON CANCER.

JULY 16TH–20TH, 1928.

THE International Conference on Cancer, convened by the British Empire Cancer Campaign, was opened on Monday last, July 16th, when His Majesty the King received the delegates from foreign countries and British Dominions at Buckingham Palace in the afternoon.

International Delegates.

Austria.—Prof. Hans Finsterer (Vienna); Dr. Carl Fleischmann (Vienna); Dr. B. Lipschutz (Vienna).

Bavaria.—Prof. F. Voltz (Munich); Prof. E. H. Zweifel (Munich).

Belgium.—Dr. Max Cheval (Brussels); Prof. A. P. Dustin (Brussels); Prof. J. Maisin (Louvain); Dr. Neuman (Brussels); Prof. Nobele (Ghent); Dr. Felix Sluys (Brussels).

China.—Dr. John Anderson (Hong-Kong).

Denmark.—Dr. Fridtjof Bang (Copenhagen); Prof. S. A. Gammeltoft (Copenhagen).

France.—Prof. Leon Berard (Lyons); Prof. Borrel (Strasbourg); Prof. Pierre Delbet (Paris); Prof. Henri Hartmann (Paris); Dr. F. Humbert, Mr. T. B. Kittredge, and Dr. C. Lillingston (League of Red Cross Societies); Dr. Lacassagne (Radium Institute); Dr. Georges Loewy (Paris); Dr. L. Mallet (Tenon Hospital); Dr. Proust (Beaujon Hospital); Dr. C. Regaud (Radium Institute); Prof. Gustave Roussy (Paris).

Germany.—Prof. Robert Bierich (Hamburg); Prof. F. Blumenthal (Cancer Institute, Berlin); Prof. Rhoda Erdmann (Berlin); Prof. L. Grebe (Bonn); Prof. Halberstaedter (Berlin); Dr. Hans Holfelder (Frankfort); Prof. Herman Holthusen (Hamburg); Prof. Jüngling (Stuttgart); Prof. Keysser (Berlin); Prof. Lahm (Chemnitz); Dr. Rostoski (Dresden); Prof. Schmorl (Dresden); Prof. Teutschlaender (Institute of Experimental Cancer Research, Heidelberg); Prof. Herman Wintz (Erlangen).

Holland.—Prof. H. T. Deelman (Groningen); Prof. William DeVries (Amsterdam); Dr. N. M. Josephus Jitta (Dutch Sanitary Council); Prof. J. Rotgans (Amsterdam); Prof. A. H. M. J. Van Rooy (Amsterdam); Dr. S. N. Waterman (Amsterdam).

Italy.—Prof. R. Alessandri (Rome); Prof. Raffaele Bastianelli (Italian League for Control of Cancer); Prof. Fichera (Ministry of Home Affairs); Prof. Pentimalli (Perugia).

Japan.—Dr. K. Itchikawa (Sapporo); Prof. Mataro Nagayo (Tokio).

Norway.—Prof. K. Brandt (Oslo); Dr. M. Haaland (Bergen).

Poland.—Prof. L. Paszkiewicz (Warsaw).

Portugal.—Prof. Custodio Cabeca (Lisbon).

Roumania.—Dr. Dumitresco-Mante (Bucharest); Dr. D. Mezincesco (Bucharest).

Sicily.—Prof. Ascoli (Catania).

Switzerland.—Dr. L. Carozzi (Geneva); Prof. Paul Clairmont (Zurich); Prof. du Bois (Geneva); Prof. A. Pittard (Geneva); Dr. Rajchman (League of Nations); Dr. Tomanek (League of Nations Cancer Commission).

United States of America.—Dr. Gustav Bucky (New York); Dr. Montrose Burrows (Washington); Dr. William B. Coley (Cornell); Prof. William Duane (Harvard); Prof. James Ewing (Cornell); Dr. William P. Healy (Memorial Hospital, New York); Dr. I. Seth Hirsch (New York); Dr. L. Hoffman (Prudential Insurance Company); Dr. Edward B. Krumbhaar (Philadelphia); Dr. Burton J. Lee (Cornell); Dr. William C. MacCarthy (Mayo Clinic); Dr. Franklin Martin (College of Surgeons); Dr. Joseph Muir (New York); Dr. James B. Murphy (Rockefeller Institute); Dr. Pfahler (University of Pennsylvania); Dr. Douglas Quick (Memorial Hospital, New York); Dr. Stanley P. Reimann (Lankenau Hospital, Philadelphia); Dr. William Seifriz (University of Pennsylvania); Dr. Channing Simmons (Harvard); Dr. Burton T. Simpson (New York State Institute for Study of Malignant Diseases); Miss Maud Slye (Chicago); Dr. George A. Soper (Society for Control of Cancer); Dr. Frank Underhill (Yale); Dr. E. G. C. Williams (Danville); Prof. Francis C. Wood (Columbia).

Dominion Delegates.

Australia.—Dr. C. B. Blackburn (Sydney); Dr. St. J. W. Dansey (Sydney); Dr. L. M. McKillop (Queensland); Dr. C. L. Park (Commonwealth); Dr. Julian Smith (Melbourne).

Canada.—Dr. E. Gendreau (Montreal); Dr. Duncan Graham (Toronto); Dr. G. E. Richards (Toronto); Dr. Harold W. Wookey (Toronto).

India.—Prof. R. B. R. N. Bhatia (Lucknow); Maj.-Gen. B. H. Deare (Calcutta); Dr. H. M. Masina (Bombay); Mrs. R. Young (Delhi).

New Zealand.—Dr. Andrew Muir Begg (Otago); the Hon. W E. Collins (New Zealand).

Singapore.—Dr. J. C. Tull (King Edward VII College).

South Africa.—Dr. R. B. Denison (Univ. of South Africa); Dr. C. Louis Leipoldt (Univ. of Capetown); Mr. W. Welchman (Univ. of the Witwatersrand).

The King's Reply to the Address.

In the course of his reply to the address presented by Sir John Bland-Sutton, His Majesty said:—

"I note, with interest, that your object is research both into the cure and causes of cancer. No doubt, in the last resort, the discovery of the cause is the only certain and absolute means of cure. But I am glad that you have not ignored the practical side of the problem. Remembering the thousands of sufferers from cancer, I feel that if your discussions lead to advance in diagnosis, treatment, or even palliation of the disease, this Conference will have justified itself and earned the gratitude of mankind."

TUESDAY, JULY 17TH.

At the Royal Society of Medicine on Tuesday morning the SECRETARY read a letter of welcome from H.R.H. the Duke of York, and Sir JOHN BLAND-SUTTON, the President, said that students of nature recognised in the animal kingdom an innate rhythm which caused bees to swarm and animals to congregate. This rhythm had brought together to-day a hive of able men, all interested in a disease which, according to the lay press, threatened to exterminate civilisation. Out of this world-wide swarming of experts Sir John hoped that some valuable help would come. He welcomed especially the delegates who had come long distances and from overseas to assist in the conquest of cancer.

Lord DAWSON OF PENN presided at the discussion on

THE ÆTIOLOGY OF CANCER,

and emphasised the magnitude of the problem and the patience necessary for even the smallest advance. The discussion was opened by Prof. J. EWING (New York), who pointed out that two distinct problems must be considered: the exciting factor or causal genesis and the nature of the tumour process or formal genesis. Knowledge of the former was comprehensive and at times almost final, and the knowledge had proved fruitful both practically and theoretically. The other problem had made little progress, despite the modern weapons of biology, biophysics, and biochemistry; it seemed to await substantial advances in general science. The problems of the nature of cancer and of growth in general were probably identical. The exciting factors acted with predisposing causes, of which chronic irritation of any kind was the most significant. Some irritants excited a slowly progressive process which might not reach the stage of cancer for many years, and minute amounts might be sufficient. Bacterial causes were less well-defined than chemical and mechanical, but the process excited by the tubercle bacillus, might progress of its own momentum and gradually acquire neoplastic properties with complete elimination of the bacillus. Precancerous changes showed every transition stage from normal inflammatory to neoplastic overgrowth, strongly suggesting that the forces at work were merely the intrinsic powers of the cell. The changes were not, however, invariably present. The factors predisposing to irritation were tissue abnormalities and heredity. The idea of dedifferentiation of adult cells was unwarranted, and Hannsemann's conception of anaplasia was more applicable to malignant cells. The hereditary element seemed to be dominant in some forms of cancer and recessive in others, and was a structural or physiological peculiarity of the organs predisposing them to cancerous reaction.

The best explanation of malignant growth was the theory of cell autonomy, but this did not account for the persistent growth over long periods and the capacity for independent existence in metastases. The soundest field of modern research dealt with growth-stimulating substances in embryonic and tumour tissue.

Cancer a Multiple Disease.

The theory of a universal cancer parasite must be ruled out for lack of evidence, but micro-organisms might act as irritants. General physiology might throw more light on cancer than the detailed biochemical processes. That malignant growth was always essentially the same in its physical, chemical and physiological relations was an unwarranted assumption, and studies aiming to solve the whole problem at one stroke were destined to fail.

Dr. F. BLUMENTHAL (Berlin) said that the cancer cell was a cell with new chemical properties which differed only quantitatively and not qualitatively from those of normal and embryonic cells. The totality of these changes led to the specific capacity of transmitting these properties to their posterity. Cancer stimuli proceeded by way of an inflammatory stage with increased cell division and regenerative processes; after this stage the cancer cell acted autonomously without stimulus. The stimulus could not be a universal cancer producer. Special and incidental cancer parasites were only significant in the pre-cancerous stage, and then only if they displayed a definite metabolism or acted as carriers of a cancer agent. This agent was probably a cellular product which on the decay of cancer cells, was taken up by macrophages, so that they became cancer cells or transmitted the agent to others. This agent was therefore infective and could adhere to parasites inside the tumours and penetrate into healthy cells. It might be something like the bacteriophage; it might be a catalyst or an enzyme. Perhaps it originated in the monocytes in the spleen.

Prof. A. LEITCH (London) said that a similar tumour might be produced by quite dissimilar substances, and very dissimilar tumours might be produced by one agent. Experimental tumour production was always a slow process; it was not the age of the subject that mattered but the time of exposure to the noxious agent. In the early stages no morphological change could be detected, but the cell undergoing cancerisation might be said to be "accumulating growth substance. Some adult cells had entirely lost their growth substance; they could not regenerate and never formed tumours, but the majority retained a certain amount and under sufficient stimulus the regeneration reaction passed into proliferation. Gye's claim to have isolated this growth substance as a virus could no longer be upheld, but it was possible to induce the filterable fowl tumour in the absence of a virus, and herein lay hope of future developments. This tumour was near enough to a sarcoma to suggest that the "growth substance" might be within the range of experimental investigation.

Dr. A. BORREL (Strasbourg) gave a lantern demonstration of his method of studying cancer cells in cover-glass cultivations stained by the method used for ultra-microscopic viruses. They showed a remarkable density of coloration and development of the mitochondrial threads, filaments, and straight rods, sinking into an indefinite stained granulation spot which might be a symbiotic microbial spore. Between the cells were sometimes seen granulations like those of molluscum contagiosum. All the cancers resulting from parasites, scalds, X rays, syphilitic lesions, &c., appeared in a cellular system which he called the neuro-tropho-pigmentary system, in which all the parasites concerned lived and grew. The "cancer age" corresponded with the whitening of the hair, when the system became a phagocyte system causing the sclerosis and degeneration of old age. All the predisposing causes of cancer had a

tive irritant action on the tropho-pigmentary tem.

Prof. H. T. DEELMAN (Groningen) described the t-mortem findings in a patient who had died of umonia with a cancer of the pharynx appearing years after operation for buccal epithelioma. e manner of growth of the pharyngeal tumour wed that a gradual centrifugal change of epithe- n into cancer cells must have taken place. The e could only be explained on the old conception nductive growth. It was possible to imagine some cess similar to that of the trephones which played art in the healing of wounds. A fruitful field for estigation would be this influence from cell to as displayed in leukoplakic epithelium.

The Filterable Agent in Chicken Tumours.

Dr. J. B. MURPHY (New York) said that the real ure of the neoplastic "agent" was at last emerg- . Two striking facts indicated that we had to l with endogenous chemical substances rather n with extrinsic living viruses; these were the h degree of selectivity and the specificity of the es produced. The chicken-tumour agent was arkably resistant to ultra-violet light and gave dence of forming a chemical union with tissues of ceptible animals. Dr. Murphy described experi- nts to determine the nature of the tumour-inducing nts. The major portion of the resulting purified tion seemed to consist of a nucleo-protein; it e a uniform Feulgen reaction of the thymonucleic l group and produced tumours in fowls with great ularity. It was impossible to believe that this tion could carry through all its precipitations living organism or virus, and its enzyme-nature med to be established. By similar technique a ilar agent producing the typical tumour, trans- ntable in 90 per cent. of fowls, had been isolated n such tissues as the healthy testicles of normal ls.

Metabolism and Cancer.

Dr. J. MAISIN (Louvain) described experiments the relation of metabolic disturbances and the earance of experimental cancers. It had been nd that copper and magnesium in suitable doses ht delay the progress of cancer and diminish the centage of metastases; and that nitrate of ionium, cted in large doses before tar-applications, reduced time before the appearance of cancer and markedly eased the percentage of metastases. This salt prevented the regression of tar cancers and sformed fowl embryomata into huge polymorphic- ed sarcomata. An albuminous extract of chick ryo accelerated cancer formation, while lecithins nucleins from blood or chick embryo retarded The liver diet of Whipple and Minot and Murphy nitely accelerated the production of tar cancer. ium seemed to be capable of destroying vitamin A modifying cholesterinæmia and glycæmia in rabbits.

Prof. RHODA ERDMANN (Berlin) described experi- ats showing tumour development in rats taking a over-rich in vitamins B and D. The process was of constant change of the respiratory quotients of body fluids. First of all only cells which grew a low quotient multiplied, and formed endothelial reticular irregularities; then, by a rise of quotient, cells isolated by these irregularities had a chance multiply. and so malignant growth might appear. rt muscle cultivated (*a*) in the plasma of can- us rats, and (*b*) in the plasma of rats fed on and D- deficient diets showed "excess fermenta- " in both cases.

Prof. J. MCINTOSH (London) argued for the virus ry of cancer, and described work on the Rous our. He was convinced that the filtrates used e cell free and behaved in exactly the same way ilterable viruses.

Prof. TEUTSCHLÆNDER (Heidelberg) said that e equally important factors coöperated propor- ately in the ætiology of cancer: the exogenous t, the local and general disposition, and the exposition. If disposition preponderated, any stimulus might produce cancer; exogenous noxious agents only produced cancer in a healthy organism through pre-cancer stages, which were the expression of grades of disposition gradually created by the quasi-specific agents. Quasi-specific carcinogenic stimuli not only elicited cancer in a suitably disposed organism, but also created the necessary disposition in a healthy organism. Endogenous substances might have a similar action to that of the exogenous, the diversity and variability of which, and their varied results, proved that they were not the immediate causes. There must be some specific factor, which was undoubtedly endogenous and probably of ferment nature. The macrophage doctrine of this factor was not, however, satisfactory for carcinoma. The factor had been shown to be formed by chemical irritation in embryonal or embryonalised cells which were specially sensitive or sensitised to growth stimuli. The moment of origin of this factor was the critical moment; up till then the "pre-cancerous" state would last. Its formation was preceded by an increase in the permeability of the cell membrane, with consequent alteration in the ionic equilibrium and calcium-potassium coefficients. The problem was a problem of metabolism. "Factors of exposition" were all agents that afforded an opportunity for the action of exogenous stimuli, and might be governed by mode of life, occupation, or condition. From the point of view of practical prophylaxis the exposition was the most important factor and should be more carefully studied.

Prof. R. BIERICH (Hamburg) described the influence of lactic acid, which was produced in greater quantities in tumour tissues than in normal, and was not immediately removed. Hence it suffocated cells with normal respiratory processes, and only those independent of oxygen could grow. It achieved such a concentration that it dissolved neighbouring cells and so caused malignant invasion.

Prof. PROUST (Paris) said that the best hypothesis to explain the phenomena was that of a cell alteration which allowed penetration by cytotropic viruses. Normally these viruses circulated in the blood in a state of adsorption or attached to corpuscles.

THE RELATIVE VALUES OF SURGERY AND RADIATION IN TREATMENT.

Prof. C. REGAUD (Paris) opened this discussion. He said that improved therapeutic results were due to advances in technique and knowledge of the use of short wave-lengths. Tumours varied considerably in their sensitivity to irradiation. "Epidermoid epitheliomata" were very sensitive, and could be cured selectively by doses which did not produce extensive radio-necrosis and which left the general tissues almost unaffected. They were the only epithelial cancers cured by radiation almost as a routine. Primary breast cancer was sufficiently sensitive to be cured, but the wide extent and the involvement of the blood-vessels, beside other reasons, made the treatment of election extensive amputation with axillary clearance. Rectal cancers were very radio-resistant; the rectal mucosa was almost as vulnerable as the neoplasm, and the anus gave a poor access. External radiation was useless and internal radiation uncertain. Extirpation was best, or failing that, colostomy, to rest the intestine and check infection of the cancer. Preliminary radiation probably did not affect the result, but rays gave a passing relief in the painful stage. Adenocarcinomata of the uterus, like other glandular cancers, were habitually incurable by selective short-wave radiation. The reasons for these differences in sensitivity were histophysiological; they depended upon the activity and rhythm of the divisions and on the secretory function. The healthy cervico-vaginal epidermis was very sensitive, but its destruction was soon repaired. The mucosa of the mouth, however, being constantly in use, was liable to become infected through denudation.

Cancer of the Cervix Uteri.

Dr. MALCOLM DONALDSON said that the difficulty of estimating the relative values of the two measures lay largely in the absence of reliable figures. Most surgeons were not interested in averages, but in individual patients, and the number of hospitals with follow-up departments was lamentably small. A further difficulty was that of comparison, of knowing which cases were "operable." Standards of cure varied; the five-year rate was not universal, and operability percentages were often calculated on the flimsiest evidence. Certain authorities had, however, obtained valuable results from onerous sifting of the evidence—e.g., Dr. Janet Lane-Claypon in this country, and Heyman, of Stockholm,[1] who gave the five-year survival rate of 3659 hysterectomies as 35·6 per cent., and of 145 cases treated by radiation at the Radiumhemmet as 46·2 per cent. The two treatments were probably equally efficacious in operable cases. Nevertheless the initial mortality from the surgical method was at least 10 per cent., but that from radiation was nil. The operation laid a patient up for two months; the irradiation kept them from work for a fortnight only, and was practically painless, so that patients were not nearly so afraid of it, and sought advice earlier. As a palliative measure in advanced cases it surpassed everything else, and it was bound ultimately to replace excision.

Dr. A. LACASSAGNE (Paris) said that the four factors governing the results of radiation in uterine cancer were the extent of the disease, the quality of the treatment, the histology of the tumour, and the associated infection. They were extremely variable, and the essential condition of success was correct technique. When this was satisfied, the chances of cure of an epitheloma were practically the same whatever the local extent of the disease or its histological variety. This did not, of course, apply to adenocarcinomata. The frequency of associated infections necessitating suspension of the treatment, and of local anatomical changes interfering with it, increased with the extent of the growth.

Dr. W. P. HEALY (New York) analysed a series of 224 cases, and showed slides demonstrating his classification of epidermoid carcinoma of the cervix into three groups according to their degree of anaplasia, which corresponded closely to their malignancy and radiosensitivity. The success of radiation depended on the promptness of the treatment and the sensitivity of the tumour; surgical success depended on early diagnosis and a low degree of malignancy. Radiation gave better results than surgery in carcinoma of the cervix, without the operative mortality.

Dr. MAX CHEVAL (Brussels) described his method of irradiating deep-seated tumours by means of a projection apparatus containing four grammes of radium element. This was applied over large fields in preference to the multifocus method. The very penetrating γ rays caused no disturbance of the general health nor anæmia, wherever they were applied. Thirty-five patients with tumours of the larynx and base of the tongue had been successfully treated, and no necrosis was observed. Large fields would supersede other methods as extended operation had superseded parsimonious excisions. Good results had also been obtained on tumours in other parts of the body, but unfortunately no statistics were yet available.

Dr. E. H. ZWEIFEL (Munich) showed tables of collected statistics of the results of X ray and radium treatment of cancer of the uterus. The percentage of cures (five years or more) in a series of 3770 was 16·8, which corresponded roughly with the surgical results. In 1629 inoperable cases, however, the percentage of cures was 11·3. Combined operation and radiation should be practised more often; radiation was valuable both before and after excision.

[1] Acta Radiol., 1927, viii., 363.

Dr. J. MUIR (New York) gave an account of evolution of the platinum radon seed, which especially useful for inaccessible lesions.

Mr. COMYNS BERKELEY summarised the result 616 cases operated upon by himself and Mr. Vi Bonney. The combined immediate mortality 17 per cent. A surgeon's operability-rate must fairness be calculated on all the patients he saw, in private practice as well as in hospital, an wards other than his own. The rush of patient the Middlesex Hospital had made an accurate calc tion impossible, but his approximate rate now only a little lower than the 63·5 per cent. of the e years during which he had used the radical operat The mortality-rate was a matter of luck; he had 60 cases without a death and then 9 de out of 18; 52 per cent. of his cases had bee Group III., the "query operable" group of co nental surgeons.

Of his 616 cases, 276 had had carcinomat and 340 non-carcinomatous glands. The immed mortality in the former group was 20·6 per cent. against 12 per cent. in the latter. Of 517 pati 240, or 46·4 per cent., survived after three years these 36 per cent. had had carcinomatous gla removed. At the end of five years 36·8 per c survived, of whom 37·8 per cent. had had carc matous glands. Whatever the effect of radium w have been on those without glands, it was a ma for speculation whether the 37·8 per cent. with gl involvement would have been alive to-day.

Mr. VICTOR BONNEY condemned current meth of classification, and pleaded for the simple staten by radiologists of the number of cases treated and number surviving after five years, to allow compar between radium and surgery. It might be usefu see if certain classes were benefited by one treatm rather than another. Five years was not long eno and the minimum period should be ten. His figures, up to the end of 1926, were 332 cases wit operative mortality of 16 per cent.; 137 had from recurrence. Of the 100 patients surviving whom he was in touch, 64 had completed five y Including six who had died and 17 who had been sight of (all after the five years), the total of survi after that period was 87, and 51 were alive and after ten years or more.

Cancer of the Rectum.

Sir CHARLES GORDON-WATSON described the me of applying radium from behind by the open per route, after removal of the coccyx and division o junction line of the levatores ani. The vagina an important auxiliary avenue of approach. important feature of this method was its attac the lines of lymphatic spread. For growths exter above the peritoneal reflection the intraperit route was used. Distant radium therapy, fro wax shield moulded to the perineum, would thought, prove especially valuable for squan celled carcinoma involving the anus. Radi would probably be found a useful preliminar excision, and should be used as an accessor excision to attack glandular enlargement in lower pelvic meso-colon. Deep X ray therap 17 cases of advanced imoperable disease had pr disappointing. Out of Sir Charles's first 15 two were well to-day and one had been cured bu died of intra-peritoneal hæmorrhage on closing colostomy. Of recent cases several gave prom cure: time was too short to speak definitely. radical operation would cure cancer of the re in all but the very young, if the patient would co to colostomy. Until the use of radium became certain, it was the duty of the profession to a radical surgery whenever possible, but radium cure and alleviate more inoperable cases every

Mr. W. E. MILES pointed out that direct s of rectal cancer was comparatively slow; v spread was so rare as to be negligible, but disse tion through the lymphatic system was all-impo Dissemination by the extra-mural system was

e widespread and serious than by the intra-al, and the upper zone of spread was more ortant than the middle and lower. Cancer spread n the rectum chiefly through the ischiorectal fat, levator ani muscles, the pelvic peritoneum, and pelvic mesocolon. He had abandoned the ineal operation in 1906, because it had failed to ude this upward zone, and had substituted the omino-perineal method, from which the recur-ce mortality had been 30 per cent. only, in r 300 cases. The operation mortality had steadily reased.

Ir. J. P. LOCKHART-MUMMERY dismissed radium tment as unsatisfactory. Of 117 private cases ted surgically, the operation mortality had been per cent., and in 242 hospital cases it had been 8·6 cent., although a large number of the patients e over 70. Of 130 operated on over five years , 57 had been "cured," 57 had recurred, 8 had l from other causes, and 8 were untraced. Analysis wed that in picked cases the chance of cure was 5 per cent., and that even bad cases with intensive olvement were well worth operating upon. Lia-ty to recurrence was extremely variable. Of patients traced beyond the five-years' period, en had died of recurrence in the sixth year, but e after that.

)r. DOUGLAS QUICK reported the results of radiation tment of 710 inoperable and for the most part eless cases. Only 150 were living at present; hese 18 were free from disease after 3–8 years, between one and three years, and 10 under a r.

Middlesex Hospital Dinner.

dinner in honour of the delegates to the Conference held at the Savoy Hotel on July 17th at the tation of the Middlesex Hospital and Medical ool. Prince Arthur of Connaught presided. After loyal toasts had been honoured, Mr. E. L. Pearce ld, the Dean of the Medical School, proposed ncer Research." He commemorated the far-ted generosity of Samuel Whitbread, whose portrait eared on the menu card and who 136 years ago given to the Middlesex Hospital its first ward set e for incurable cases of malignant disease. The ess of the Middlesex was due to the uniting under management of the general hospital, the medical ol, and the research laboratory, thus coördinating whole of cancer research—pathological, biological, ological, and statistical. The growing sense in the lic mind of the seriousness of the problem, the ker diffusion of knowledge and the higher standard nedical and scientific training, made it possible to ecute research with good hope of success. Progress ht be slow, but those who believed did not make e. Prof. H. T. Deelman, of Groningen University, ying, described the account he had recently read fatal case of malignant disease recorded by a er physician 300 years ago. Three hundred years e men would either look on cancer as an historical osity or pity us for our ineffectual ways of dealing it, but they would reap the benefits of our present urs. He paid tribute to English initiative and gy in research. Prof. Raffaele Bastianelli, of the versity of Rome, praised the impulse that the dlesex Hospital had given towards the attack on cancer problem, and prophesied for it a great re. The health of the Guests was proposed by Mr. Sampson Handley and responded to by Prof. C. aud, Director of the Institut du Radium in Paris, Prof. James Ewing, of Cornell University. Sir n Bland-Sutton proposed the health of the Chair-n. The party consisted of some 180 hosts and guests formed a happy occasion for the reunion of kers in many different lands.

URREY COUNTY HOSPITAL.—This institution, at dford, is to be enlarged by the addition of 52 beds. extension has become necessary largely by reason of number of motoring accidents.

SHEFFIELD SCHOOL OF MEDICINE.

CENTENARY CELEBRATIONS.

LONG before the University of Sheffield was constituted in 1905 its medical faculty was in existence as the Sheffield School of Medicine, whose history was briefly told in our issue of July 7th (p. 26). The celebrations on July 11th marked the centenary of this school's foundation and testified to its importance in the progress of medical education among the provincial centres of this country.

The proceedings opened in the Firth Hall of the University with an address by the Chancellor, the Marquess of Crewe. In welcoming the delegates from other universities, faculties, and schools of medicine, Lord Crewe mentioned an address delivered 20 years ago by the late Sir Clifford Allbutt, and quoted a phrase which he considered one of the clearest he had ever heard on the function of a university: "the great value of a university education lies in the fact that the students come into contact with and see real research work actually being carried on." This, and the free exchange of ideas which could only occur in an atmosphere of "live work," were, he thought, the most valuable parts of a university education.

Sir Farquhar Buzzard, Regius Professor of Medicine in the University of Oxford, in his reply to the Chancellor, spoke of the fraternal feeling between the old and the new universities, and said that it seemed strange to find a parental university which had only just attained years of discretion watching a member of its school-room celebrate its hundredth birthday. He briefly sketched the early life-struggles of the school.

Sir Humphry Rolleston, Regius Professor of Physic in the University of Cambridge, also referred to the early years of the school. The birth of an institution, like that of an individual, was, he said, by no means painless, but in spite of the difficulties attending its birth, the Sheffield School of Medicine had grown into a very vigorous and flourishing offspring of which the University was justly proud. His own University, he said, owed a great deal to Sheffield, which had sent them that great classic Henry Jackson, and those of his colleagues who knew Henry Jackson wished him to express this feeling and to congratulate the staff of the Sheffield Medical School, whose first whole-time professorship of anatomy was founded by the widow of Arthur Jackson, Henry's brother, to perpetuate the memory of her husband. No history of the Medical School of Sheffield could be written, went on Sir Humphry, without an account of the invaluable services rendered to it by the present professor of medicine, Dr. Arthur J. Hall, who by his unselfish devotion and inspiring influence, poured out for 40 years, had undoubtedly done more for the school than any other single individual. During these 40 years Prof. Hall had held and resigned two previous professorships, those of physiology and pathology, and the invaluable Pathological Museum of the University was almost entirely due to his personal efforts.

Prof. J. Sholto Douglas, Dean of the Faculty of Medicine, then presented to the Chancellor the various delegates, several of whom had been personally connected with the University in its earlier days, notably Sir John Robertson, who was professor of bacteriology, in 1898, and medical officer of health for Sheffield, and Prof. J. S. Macdonald, who was the second whole-time professor of physiology, being appointed in 1902 and holding the chair till 1914, when he returned to Liverpool to succeed Prof. Sherrington. The following delegates were received:—

University of Birmingham, Sir John Robertson; University of Bristol, Prof. Edward Fawcett, F.R.S.; University of Cambridge, Sir Humphry Rolleston; University of Dublin, Prof. Joseph W. Bigger; University of Durham, Sir Thomas Oliver; University of Edinburgh, Prof. G. M. Robertson; University of Glasgow, Prof. John Glaister; National University of Ireland, Patrick Bennett; University of Leeds, Prof. J. Kay Jamieson; University of Liverpool, Prof. J. S. Macdonald, F.R.S.; University of London, Sir Holburt Waring; University of Manchester,

Prof. H. S. Raper; University of Oxford, Prof. Sir Farquhar Buzzard; University of Wales, Prof. A. W. Sheen.

Prof. J. B. Black, the Public Orator, then presented Dr. H. H. Dale, F.R.S., Prof. A. J. Hall, Sir Frederick Gowland Hopkins, F.R.S., and Sir Thomas Lewis, F.R.S., for the honorary degree of Doctor of Science. Having conferred these degrees the Chancellor declared the Congregation closed, and Sir F. Gowland Hopkins offered the thanks of the new graduates for the honour paid to them.

The Faculty's Luncheon.

After the Congregation a luncheon was held at the Royal Victoria Hotel, attended by a large gathering of old Sheffield students. Besides the honorary graduates and delegates, the Lord Mayor and Master Cutler were the guests of the Faculty of Medicine, whose chairman, Prof. A. J. Hall, presided over the gathering.

After the loyal toasts had been honoured the Chancellor of the University rose to propose "the Faculty of Medicine." He referred to the close association between the civic authorities of the city and the University, particularly the Faculty of Medicine, whose members did so much to assist in maintaining the efficiency of the health department of the city both directly and indirectly. He did not agree with those pessimists who said that because the young student of to-day appeared to be frivolous the life of the university was doomed, and he quoted in support of this the following statement, made 60 years ago by Acland with reference to Oxford University: "the Government, trade, laws, are not only being criticised and changed, but the conditions of modern society stimulate nervous excitement, and the late hours and feverish life are undermining our very existence." He was reminded by this of the famous saying about another institution that the more it changed the more it remained the same.

On rising to reply Prof. Hall was greeted with prolonged applause. He spoke of the dinner held a hundred years before at the Tontine Hotel, the only record of which was that Dr. Knight was in the chair and that after dinner "several appropriate speeches were made and the convivialities were kept up till a late hour." To-day, said Dr. Hall, they were met to celebrate not a single stone, but a completed building, not at a small inn where post-horses might be changed, but at a large railway terminus hotel; but in spite of these changes there were the same guests at the two functions, including the Master Cutler, town collector, and the chairman of the infirmary. Prof. Hall was glad to say that one of the earlier teachers of the school, Dr. F. Woolhouse, was still alive, though living in retirement in Sheffield, whilst a student of the first 50 years, Dr. A. Payne, still practised in the city, and had been at the Congregation that morning. The school had been saved in its youth, he thought, by two things, a man and an event, the man being Arthur Jackson and the event the founding of Firth College, to which it subsequently became affiliated. Prof. Hall went on to speak of some of the work done by those who had been teachers there, notably Dr. Christopher Addison, Prof. Arthur Jackson, and Sir John Robertson, who, whilst working in inadequate temporary premises as a pathological laboratory, persuaded the Government to institute the compulsory notification of pulmonary tuberculosis. Finally he referred to a generous gift by Dr. Walter Smith Kay, who has presented a sum of money to the Faculty to provide a yearly gold medal to be given to that student who shall have shown most efficiency in the study of mental diseases, a gift which was very happy, because that Sheffield has just instituted a scheme of out-patient mental clinics at the two large voluntary hospitals in association with the South Yorkshire Mental Hospital.—There were a number of other toasts and replies before the luncheon ended.

Reception at the University.

In the evening a reception and conversazione was held at the University, at which the various faculties had arranged a series of demonstrations and exhibitions. The guests were received in the Firth Hall by Colonel and Mrs. H. K. Stephenson and Sir H Hadow, after which they were invited to view various experiments being conducted in all University departments. In the Firth Hall were exhibited a large number of engravings paintings of famous medical men of the last 100 y together with old medical text-books and diplo The librarian had also displayed in the Edgar Library the valuable collection of ancient books manuscripts.

That the whole of the centenary celebrations a success was due in no small measure to the wo the committees and members of faculties who h to organise it, as well as to the proverbial fine wea which attends anything of importance to the Cit Sheffield.

THE OSLER CLUB.

THE Osler Club was founded recently in Sir Wil Osler's memory by a group of medical student an overt acknowledgment of the inspiration of writings. The general object of the club is for the s of the history of medicine, and it is intended th general meeting shall always be held on Os birthday. Accordingly, on the evening of July 1 the club met and entertained a number of guests meeting held at Wimpole-street, at the house of Philip Franklin, whose son, Mr. A. Franklin, is honorary Secretary of the Club.

Sir Wilmot Herringham addressed the meetin informal speech, the description of which as Oslerian Oration he deprecated. He spoke of Os love of rare cases, not because they represe extremes of normal physiology, but because t rarity appealed to him as an artist. He told how young Osler, inspired by the German educati "system," and by what he had seen of prac training in Great Britain, completely altered outlook of medical teaching in America, and later he was the prominent advocate for the estab ment of clinical units in this country. Dwe happily on Osler's personal charm and affectio nature, Sir Wilmot closed a speech of genuine fee

Dr. E. O. Meynen, representing the Ger Ambassador, proposed a vote of thanks to the Or and wished particular success to the club as an ag for the promotion of international goodwill, und patron saint whose name was held in reverent es in Germany.

Sir Humphry Rolleston then spoke of "Osler Human Being," showing that it was the combin of so many different personalities in one body made Osler the beloved man that he was. O present who joined in an Osler symposium Prof. D. Fraser-Harris, who spoke of hin a physiologist; Dr. H. H. Scott, who dwelt o merits as a naturalist and comparative patholo Dr. Andrew Balfour, who testified to his deep int in tropical medicine; Sir Squire Sprigge, who rege him as a great man of letters, Sir Walter Flet Dr. Franklin Martin (President-Elect of the Ame College of Surgeons), Dr. J. D. Rolleston, and Ernest Jones.

Among other guests of the club were Sir Th Lewis, Dr. Burton Haseltine (Chicago), Mr. Geo Keynes, Mr. S. Damian, Dr. Henry Viets (Boston Mr. Philip Franklin, and an opportunity was to see an exhibition of a selection of Osler's writ literary and scientific, of biographical appreciat and of books inspired by him, bearing witness t many-sided nature of his interests and enthusias

A reproduction of the Sargent crayon sket Sir William Osler, lent by the Royal Societ Medicine, occupied the place of honour, and thr the kindness of several London librarians, pic of the Triumvirate of British Medicine—Lin Harvey, and Sydenham—were displayed, tog with some of Osler's favourite books—Religio M The Anatomy of Melancholy, Lettres de Gui H

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Congress of the Royal Institute of Public Health.

THE plans for the Congress of the Royal Institute f Public Health, which is to be held in Dublin from ugust 15th to 20th, are approaching completion. he honorary President of the Congress is Mr. James IcNeill, Governor-General of the Irish Free State, nd the President is Mr. Richard Mulcahy, Minister or Local Government and Public Health. The work f the Congress will be carried out in four sections : ection I., State Medicine ; Section II., Bacteriology, athology, and Biochemistry ; Section III., Maternity nd Child Welfare, School Medical Inspection ; ection IV., Production and Control of Milk and ood. Several interesting discussions have been rranged, and a pleasant programme is also prepared or the entertainment of members of the Congress. t is an additional attraction that the National Athletic estival of Ireland, the Failteann Games, is to be held n Dublin at the same time.

The Dentists Bill.

The Bill for the registration of dentists in the Irish ree State has at length passed the Senate. There as no difference of opinion on the general principles f the Bill, which follows closely the British Act of 921, but a great deal of time was spent in considera- on of the position of unqualified dentists who had iled to register under the Act of 1921. Many enators appeared, indeed, to be more interested in ie protection of unqualified dentists than in the rotection of the public. Finally, the Minister in harge of the Bill accepted an amendment, by virtue f which unqualified dentists who have been practising entistry as their principal means of livelihood since 921, and were then 21 years of age, will be permitted o register as dentists if they succeed in passing an xamination conducted by the Minister or by the ental Board. It is somewhat of an anomaly that ie Dental Board is mentioned, since all other matters oncerning the education of dentists are put under the upervision of the Medical Registration Council, and ot of the Dental Board.

The Local Authorities Bill.

Mr. De Valera's Bill to amend the Local Authorities ct of 1926 was defeated last week in the Dail on the otion for its second reading. The Government is to e congratulated on its determined opposition to the ill, which would have gone far to nullify the good ffects of the principal Act. It is doubtful, indeed, hether Mr. De Valera's party was very anxious that ie Bill should pass, and the genesis of the Bill probably y in the desire to court popularity with the members the local authorities who have been " disquieted " y their loss of power and patronage. In the lengthy ebates of the past few weeks no single case was oted in which the present method of making local ppointments could fairly be said to be at fault. In gard to medical appointments there cannot be any oubt that the electors have under the present system much wider range of choice than electors had rmerly. Before the Act of 1926 only a few candi- ates, possessed of local influence, presented themselves candidates for an appointment. Now that appoint- ents are made on their merits by an independent dy the choice lies not among three or four candi- ates, but among three or four score.

NFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 7TH, 1928.

Notifications.—The following cases of infectious sease were notified during the week :—Small-pox, 2 (last week 219) ; scarlet fever, 1715 ; diphtheria, 2 ; enteric fever, 52 ; pneumonia, 716 ; puerperal ver, 45 ; puerperal pyrexia, 85 ; cerebro-spinal fever, 14 ; acute poliomyelitis, 13 ; acute polio- encephalitis, 2 ; encephalitis lethargica, 31 ; con- tinued fever, 1 ; dysentery, 13 ; ophthalmia neonatorum, 106. No case of cholera, plague, or typhus fever was notified during the week.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on July 10th–11th was as follows :—Small-pox, 41 under treatment ; scarlet fever, 1757 ; diphtheria, 1889 ; enteric fever, 16 ; measles, 448 ; whooping-cough, 176 ; puerperal fever, 31 (plus 6 babies) ; encephalitis lethargica, 66 ; poliomyelitis, 1 ; " other diseases," 30. At St. Margaret's Hospital there were 21 babies (plus 16 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox or enteric fever, 33 (7) from measles, 4 (0) from scarlet fever, 21 (4) from whooping-cough, 22 (5) from diphtheria, 51 (7) from diarrhœa and enteritis under two years, and 24 (3) from influenza. The figures in parentheses are those for London itself.

Of the 26 fatal cases of measles outside London 8 were reported from Liverpool and 4 from Newcastle-on-Tyne. Of the 17 cases of whooping-cough outside London 4 were reported from Birmingham. During the same week Glasgow reported 7 deaths from whooping-cough. Liverpool and Salford each reported 3 deaths from diarrhœa.

The number of stillbirths registered during the week was 308 in the great towns (corresponding to a rate of 41 per 1000 births), including 54 in London.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are notified :—Surg.-Capt. : C. T. Baxter to *Vivid* for R.N. Barracks, Devonport. Surg.-Comdrs. : T. J. O'Riordan, lent to N.Z. Division ; L. Warren to *Queen Elizabeth ;* A. Craig to *Pembroke*, for R.N. Barracks, Chatham, and to *Emerald* (on recommg.) ; J. D. Keir to *Pembroke*, for R.N. Barracks, Chatham ; and A. G. Taylor, to *Cairo* (undated). Surg. Lieut.-Comdrs : J. W. Tighe to *Pembroke*, for Sheerness Dock- yard ; H. L. Douglas to *Cairo ;* and J. E. Clark to *Tamar*. Surg. Lieut. : E. J. Weeks to *Fisgard*. Surg. Lieut. (D.) : G. Baker to *Victory*, for R.M. Infirmary, Portsmouth, and to *Victory* for R.N. Barracks.

ROYAL ARMY MEDICAL CORPS.

Maj. W. J. Dunn retires on retd. pay and is granted the rank of Lt.-Col.

The undermentioned Capts. to be Majs. : J. Cullenan, C. O. J. Young (Prov.), and R. N. Phease.

Temp. Lt. P. Weiner relinquishes his commn.

TERRITORIAL ARMY.

J. H. Dunn (late Surg. Sub-Lt. R.N.V.R.), H. Broadbent, F. H. Hollingshead, Lt. R. I. Poston, 2nd Lt. S. G. M. Lynch, and F. Lawrence to be Lts.

ROYAL AIR FORCE.

Flying Officer F. A. O'Connor resigns his short service commission.

INDIAN MEDICAL SERVICE.

Lt.-Col. G. O. F. Sealy retires.

S. Hartley to be Capt. (on prob.).

Bijeta Chaudhuri, Shankar Sahai Bhatnagar, C. F. J. Cropper, K. H. A. Gross, E. V. Claydon, V. H. Sarland, J. Acheson, E. A. O'Connor, J. P. J. Little, P. L. O'Neill, and V. T. J. Lynch to be Lts. (on prob.).

THE NEW BETHLEM HOSPITAL.—Last week Prince Arthur of Connaught, in place of the Duke of Connaught, his father, who has been indisposed, laid the foundation-stone of the new Bethlem Hospital at Monk's Orchard, Shirley, near Croydon. The Lord Mayor of London recently presided at a dinner at the Mansion House in aid of the building fund. The cost of the new buildings will be £450,000, of which £330,000 was available. Towards the balance of £120,000 £42,000 has already been raised ; of this sum Sir Charles Wakefield, President of the Royal Hospitals of Bridewell and Bethlem, has given £25,000.

Obituary.

WILLIAM DYSON, M.D. LOND., J.P.

THE death, at Sheffield, on July 9th of Dr. William Dyson in his seventy-ninth year will recall to many members of the medical profession in the Northern Midlands a name which was familiar to them in the later decades of last century and the first half of this.

Born in 1849 at Thurgoland, near Penistone, of an old Wesleyan stock, and educated at the then Wesley College, Sheffield, Dyson's medical studies were carried out at University College Medical School, London, where he was a fellow student with, and a close friend of, Sir Thomas Barlow. At his final M.B. Lond. in 1873, he took honours in medicine and midwifery, afterwards holding resident appointments at University College Hospital. He then returned to practice in Sheffield, being appointed physician to the Sheffield Public Hospital (now the Royal Hospital) in 1876, and resigning this post in 1885 on being elected physician to the General (now Royal) Infirmary, with which institution he remained in active connexion for 27 years. On his retirement in 1912 he was made a consulting physician. During this time his success as a consultant was very great. It began early, continued long, and extended over a wide area. He came to Sheffield just when medical knowledge was undergoing great developments, and as a representative of the new school he soon displaced such few older competitors as there were. For the next 25 years he had the field of medical consulting work almost entirely to himself. It was, writes one of his colleagues, his gentleness and sympathy in dealing with all with whom he came in contact, coupled with an exceptionally thorough knowledge of his professional work, which no doubt gave the key to his wide popularity as a consultant and to his very successful practice.

Dyson took an active interest in the school of medicine, of which he was a member of the teaching staff for many years. When the University College was founded in 1897 he became the first professor of medicine, and on retiring from that post in 1901 was appointed emeritus. On the death of William Favell in 1897 Dyson was appointed a Vice-President of the College in his place, and became the recognised leader of the profession. In the same year he was elected to a vacancy on the Town Trust, of which he remained an honoured member until his death. He was also, as his father before him, on the Commission of the Peace for the West Riding. He took an active interest in the Sheffield Medico-Chirurgical Society the Yorkshire branch of the British Medical Association, and the West Riding Medical Charitable Society, holding office in each. When the British Medical Association proposed to hold its annual meeting in Sheffield in 1908, Dyson was invited unanimously by his colleagues to be nominated as its President. This, however, he was obliged to decline on the grounds of health.

Of a modest and retiring disposition, Dyson was seen at his best in the medical wards which he loved. Successive generations of practitioners and students all testify to his unusual abilities as a clinician and as a teacher. Public work and ceremonial occasions were distasteful to him, and he found the effort of them very great. Always somewhat delicate, writes the same colleague, the strain of his large practice told heavily upon him. Nor is this a matter for surprise. The motor-car had not then come into use. All country work had to be done by train or by carriage, so that a large consulting practice in those days involved very long hours indeed, and much weary time spent in travelling. To those outside the area in which his practice lay, Dyson's name was less well known than his clinical knowledge and skill deserved. The constant calls of practice allowed him little time for writing after a few early contributions to medical literature on cases of special interest. By colleagues and students he was beloved as a intimate friend.

Dr. Dyson retired from practice some years ag In 1916 the loss of his younger son, William Huber an officer in the Queen's Westminster Rifles, wh died of wounds in the German lines after leading raid into the enemy trench, was a blow from whic he never recovered. His death occurred only a fe days before the centenary of the Medical School, an a fitting tribute to his great services was paid by th Chancellor before the opening of the Degree Congr gation at Sheffield University in connexion with it celebration. His widow, a son—Dr. Ernest Andrew Dyson, of Guildford—and a daughter survive him.

Correspondence.

"Audi alteram partem."

INTENSIVE SERUM TREATMENT OF SEVER DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—We should like to add our testimony to th of Dr. H. S. Banks and Dr. G. McCracken as to th value of *very* large doses of antitoxin in the treatme of the severe toxic case of diphtheria. In this hospit we have been accustomed, for several years past, t employ doses of "concentrated" antitoxin comparab in unitage with those used by Dr. Banks and h colleague. There has hitherto been one importa difference between our procedure and theirs—viz the route of injection. The subcutaneous route never employed by us; the vast majority of o cases has received antitoxin intramuscularly. In on a minority of the worst class of case a relatively sm intravenous injection has been given in additio Until we were made aware, some few weeks ago, Dr. Banks's work we had been fairly satisfied with o recovery-rate; but the record of his results has l us to analyse in detail the cases admitted to Litt Bromwich Hospital with a diagnosis of diphther during the 12 months of 1927, with a view to findi out whether our recovery-rate might be still furth improved.

As regards case mortality over the whole seri consideration of the figures which we submit belo will, we think, show that there is little to choo between Banks's and McCracken's percentage a ours. But detailed consideration of the case mortali and complication-rate in the different classes of ca shows that the employment of large doses of antitox by the intravenous route produces results far superi to those obtained, in comparable cases with comparab unitage, when the intramuscular route is employe During the 12 months ended Dec. 31st, 1927, a gro total of 1842 cases was admitted to this hospital wi a diagnosis of diphtheria. From this total has to subtracted no less than 542 cases which were examp either of so-called "bacteriological diphtheria" conditions other than diphtheria. This leaves a r total of 1302 cases of indubitable clinical diphther These 1302 cases are analysed in the table.

Comparing Dr. Banks's Classes A and B whi received, almost exclusively, large doses of antitox intravenously, with our similar classes, it will be se that his case mortality is 10 per cent. less than ours Class A and non-existent in Class B (against c 4·6 per cent.); and whereas Dr. Banks dwells up the rarity of, at any rate, severe pareses, such compli tions, in our Class A occurred in more than a third the survivors. In the remaining groups our pares rate (all types being included) is satisfactorily lo Of the 19 cases in our Class A who received a sm dose of antitoxin intravenously in addition to a la dose intramuscularly, 7 were hopelessly toxic a died within a few hours of admission; 2 others di within 15 days of myocardial failure, and 1 in t fifth week of diaphragmatic paralysis. Of t

urvivors 6 recovered without complications; the emaining 3 had palatal paresis only.

This year we have largely increased our intravenous losage in the Class A case. We now give 40,000 or nore units by that route in addition to a following-lose intramuscularly. The results in a consecutive eries of 19 cases are as follows: 1 died within a few ours of admission; 3 died later from myocardial legeneration. Of the remainder 14 have recovered

Analysis of 1302 Cases of Indubitable Clinical Diphtheria.

A = Malignant or severely toxic. B = Moderately toxic. Ci = Moderate. Cii = Mild. D = Laryngeal (purely).

	A.	B.	Ci.	Cii.	D.	Total.
ases	142	87	76	975	22	1302
% cases in each group	10·9	6·6	5·8	74·8	1·6	
ver. no. of units of antitoxin ..	I.M. 80,000†	I.M. 50,000	I.M. 32,000	I.M. 8,000–24,000	I.M. 8,000–24,000	
eaths ..	46	4	1	1	4‡	56
f these died under 48 hrs.	22	2	—	—	—	
ross case mortality %	32·4	4·6	1·3	0·1	18	4·3
ase mortality minus 48 hr. deaths	17	2·3	1·3	0·1	18	2·46
ecovery *without* pareses* ..	46 (32·4 %)	66 (75·8 %)	71 (93·4 %)	959 (98·3 %)	18 (100 %)	1,160 (89 %)
ecovery following pareses* ..	50 (35·2 %)	17 (19·6 %)	4 (5·3 %)	15 (1·6 %)	—	86 (6·7 %)

* Percentages calculated on survivors. † Plus I.V. 12,000 in 19 cases. ‡ All broncho-pneumonia.

ith nothing more serious than slight palatal paresis nd one after palatal and pharyngeal paresis of reater severity. Until it comes about that a pre-entible disease is prevented, it is some satisfaction to now that the large dose of antitoxin given intra-enously is capable of obviating at least some of the agedies which otherwise must occur.

We should like to congratulate Dr. Banks and Dr. IcCracken upon their results.

We are, Sir, yours faithfully,

E. H. R. HARRIES.
W. M. MACFARLANE.

City Hospital, Little Bromwich, Birmingham, July 11th, 1928.

RADIOTHERAPY OF CANCER.

To the Editor of THE LANCET.

SIR,—In your issue of July 7th (p. 34) there is a ort description of the findings of the subcommission experts charged by the Cancer Commission of the eague of Nations with the study of radiotherapy of ncer, at its preliminary meetings on June 18th and 9th, under the presidency of Prof. Cl. Regaud. One aragraph reads:—

"On the broader questions relating to the treatment of erine cancer by radiology the President submitted a ries of considerations which, after a general discussion, ere adopted by the subcommission as representing the most portant directions to which its future discussions should directed, and on which definite recommendations should made in due course to the Health Committee with a ew to publication. Among these considerations were: Propaganda among doctors and the general public in der to ensure the early discovery and early and correct eatment of cancer of the uterus. 2. Increase in the number consultation centres. 3. Organisation of centres for icroscopic analysis in order to ensure early diagnoses. Recommendations for the organisation of the correct eatment of the disease. 5. Recommendations for the dio-therapeutical equipment of clinics. 6. Disadvantages out-patient treatment. 7. Recommendations for the mpilation of reliable statistics. 8. Recommendations for ecial scientific research."

I should like, with your permission, to draw tention to the fact that on May 14th last I sent ou a contribution on radium therapy in which almost identical suggestions were embodied. These suggestions of mine were:—

1. Large hospitals with many cases of sufferers from carcinoma or sarcoma should engage in research and treatment by radium and radio-active substances.

2. Owing to scarcity and the danger of supply being at least temporarily exhausted, or the market price altered by increased demand, small hospitals, where the radium would lie idle for periods, should not be encouraged, and suitable cases should be referred to large centres. If needs be, the patients' fares and maintenance might be paid, as in Sweden. A small quantity of expensive radium in any case is useless, and cannot be applied without expert technical guidance.

3. These large radium centres would link up throughout the country and deal with the cancer plague territorially—each to be a centre for treatment, research, and teaching, with post-graduate and student courses—not only in radium therapy, but also as anticancer centres for investigations from every aspect of the whole problem, with sociological, pathological, biological, medical, surgical and radio-therapeutic measures, all being carried on by team methods.

4. Frequent opportunities should be made for free intercourse and discussion on new methods between all anticancer centres, with opportunities to see the best work of other countries, with interchange, as necessary, of working members of the staffs.

5. Statistics of results, with exact technique, to be kept, compared, and published for the benefit of other investigators.

6. No effort should be spared to obtain the attendance of patients when in an early stage. With the fear of operation reduced, this should soon be an easy matter, subject to proper enlightenment and encouragement of the public through the publicity of the Ministry of Health, the public health authorities, and the private practitioner, whose coöperation is most essential to allay the dread of sufferers who shrink from the idea of the operating table, and to hearten them to seek treatment voluntarily at the earliest moment by the newest scientific methods, painlessly applied.

My great interest in this matter has been stimulated from the reason that, although I have been brought up for the greater part of my life in surgical operating theatres, within the last few months I have been so strikingly impressed by recent results of radium treatment that I feel most strongly on the question.

I am, Sir, yours faithfully,

SPENCER MORT.

North Middlesex Hospital, Upper Edmonton, July 10th, 1928.

MIGRAINE.

To the Editor of THE LANCET.

SIR,—Dr. Purdon Martin, writing in your issue of July 14th (p. 82), is, I think, under a misapprehension as to my point of view. He says that I have regarded migraine as a psychoneurosis. What I have said is that "however skilful the ophthalmic surgeon, and however meticulous the general treatment, although relief from the actual paroxysms may be obtained, *the patient does not become well*, unless the psychological situation is elucidated and adjusted." This statement, empirical though it may be, is, I believe, true; and I do not know many people who will care to contradict it. I do not know if Dr. Purdon Martin was amongst the audience who, last night, listened to an admirable address by Dr. Seif, of Munich, before some of the Adlerian groups in London, but he could hardly have heard a more convincing statement of the reasons for treating, not hypothetical and hypostatised diseases, but *individual patients* whose life and health is disordered. And the fact is that, when the psychological state, as well as the physical errors, of the migrainous is adjusted, the patients get well and keep well. Whether or no this fact implies that "migraine is a psychoneurosis" I do not know, in the absence of a definition of a psychoneurosis. Nor do I know why the suggestion that migraine is a psychoneurosis should seem inadequate to account for such a symptom as ophthalmoplegia. I do not find it more difficult to believe that paroyxsmal ophthalmoplegia should disappear when psychical states are adjusted than I do to believe that diarrhœa, involuntary lacrymation, involuntary micturition, impotentia coeundi, angina

pectoris, "functional" paralysis, hystero-epilepsy, and a hundred other conditions should occur when psychical states are disturbed and disappear when they are adjusted.

I do know this, that some years ago I had ophthalmoplegic migraine of so persistent a nature that several kind and skilful friends begged to be allowed to do something to one of my tendons! I am grateful to them, but much more grateful, on the one hand, to those who insisted on correction of the "organ inferiority"—irregular astigmatism and muscular defect—by glasses, and on the other, to those who helped me to see the psychological error and difficulty. But my position is diametrically opposed to that of those who, regarding "migraine as a psychoneurosis," let it go at that, and (in another direction) to that of those who, while believing migrainous attacks arise "in some way from a functional disorder of the vegetative nervous system," do not inquire what are the psychological difficulties correlated with this disorder. The proof of the pudding is in the eating. Migrainous people, unless they are old, and their attacks have become organised, and their arteries stiff, and their kidneys inadequate, *do get well*; if, that is, in addition to correction of their organ-inferiorities and adjustment of their physiological divagations, investigation and adjustment of their psychological troubles is carried our. Explanations and theories have a secondary place. The thing *works*.

I am, Sir, yours faithfully,

Wimpole-street, W, July 13th,. F. G. CROOKSHANK.

To the Editor of THE LANCET.

SIR,—Dr. Martin's article gives a very comprehensive view of this malady and its suggested treatment from the physical side. Scant attention, however, has been given to migraine as a psychoneurosis. In my experience the migrainous sufferers are usually "thinkers." Much phantasy formation is their pleasure-ground. Their psychical energy remains dammed up rather than expressed in action. The migraine sufferer is usually the prey of his repressed anger, rage, and humiliation, which he turns in towards himself. Migraine ensues when an uncongenial task is to be performed. It is a means of being in the limelight when other means fail. The greatest relief lies in helping the patient to see himself and to make him conscious of his fraudulent trick, which is a means of heightening his own ego-consciousness and his desire for superiority. The energy, when liberated, must be directed into fresh channels of expression. Readjustment is necessary. General measures do help the migraine sufferer, but they do not *cure*. The psychological situation must be cleared up. Dr. F. G. Crookshank, in his little book, gives most valuable information on this tiresome malady.

I am, Sir, yours faithfully,

Harley-street, W., July 14th, 1928. ESTELLE COLE.

DIPHTHERIA CARRIERS.

To the Editor of THE LANCET.

SIR,—Dr. Harvey, in his interesting article in to-day's issue upon the treatment of diphtheria carriers, does not mention the possibility of the bacillus being carried in a tooth cavity. Some thirty odd years ago I saw a boy of between 10 and 12 from Dover. He and his sister had both carried diphtheria. Both had their tonsils and adenoids removed, and the bacilli disappeared from the girl's nose and throat completely, but continued in the boy's throat. I could find nothing abnormal to account for his continuing a carrier, the tonsils and adenoids having been most effectively removed. It occurred to me, however, to search his teeth with a mirror, and I thus discovered a cavity in the posterior face of his left last lower molar, which was completely hidden from ordinary inspection. I suggested searching this cavity, and, if the bacilli were found there, the appropriate treatment of the tooth. My advice was acted upon, the swab gav ample evidence of a nest of diphtheria bacilli, th cavity was cleaned out and filled, and the bacil disappeared from the mouth within the week, after th boy had been a carrier for six months.

I am, Sir, yours faithfully,

MACLEOD YEARSLEY.

Wimpole-street, W., July 14th, 1928.

ANATOMICAL NOMENCLATURE.

To the Editor of THE LANCET.

SIR,—In your annotation of May 26th under th heading you do me, I believe, an injustice, but that is detail. The Anatomical Society, at its recent meeting Manchester, appointed a committee with a view revision of the Basle Nomenclature (B.N.A.). I beg no through you to offer my services, unofficial, unco ditional, whole-hearted, and loyal, in the way criticism and suggestion only, hoping to be able indicate how, beginning with the B.N.A. and applyi the principles advocated by its own authors, we ma evolve such a nomenclature as will win favour a survive solely because of its fitness. In the past have made many mistakes. I take what comfort I c from the thought that he who makes no mistakes m make nothing else.

I am, Sir, yours faithfully,

Leeds, July 11th, 1928. WM. CUTHBERT MORTON.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Reorganisation of Offices (Scotland) Bill.

IN the House of Lords on July 16th the Reorganisati of Offices (Scotland) Bill was read the second time.

HOUSE OF LORDS.

THURSDAY, JULY 12TH.

Child Destruction Bill.

ON the motion of Lord DARLING the report of amendme to the Child Destruction Bill (formerly the Infanticide B was received and further amendments, mostly of a draft nature, were agreed to.

On July 16th the Child Destruction Bill was read third time, and passed.

MONDAY, JULY 16TH.

DOGS ACT (AMENDMENT) BILL.

Lord Banbury's Amendment.

On the motion for the third reading of the Dogs (Amendment) Bill, which has already passed the Commc

Lord BANBURY moved to leave out Clause 2. He s that under the Act of 1906 Clauses 3 and 4 must be r together. Clause 4 was the clause which under this it was proposed to leave out and substitute for it anot clause which he (Lord Banbury) proposed to leave thus leaving the law in exactly the same position as it now. Clause 4 of the Act of 1906 said that:—

"Any person who takes possession of a stray dog shall fo with either return the dog to its owner or give notice in writ to the chief officer of police of the district where the dog found."

Clause 3 which must be read in conjunction with said:—

"Where a police officer had reason to believe that any found in a highway or place of public resort is a stray he may seize the dog and may detain it until the owner claimed it and paid all expenses incurred by reason of detention."

Subsection (5) said:—

"No dog so seized shall be given or sold for the purpose vivisection."

That was the law as it stood now. In February of year a Bill was introduced in the House of Commons, chief object of which was to make owners of dogs lia for injury to poultry. To that he had no objection. it then went on to repeal Section 4 of the principal which he had just read and to substitute this:—

"Any person who takes possession of a stray dog shall fo with either return the dog to its owner or deliver the dog

olice officer of the police area in which the dog was found and form that officer where the dog was found."

The clause further said :—

"A dog which has been delivered to a police officer under this ction shall be treated as if it had been seized by that officer pursuance of Section 3 of this Act."

hat was to say that if any dog was seized by a police ficer it should be treated in pursuance of the Act of 1906, ith the result that no stray dog or lost dog which was ken to the police would be used for the purpose of vivi- ction. That was the Bill as introduced in the House of ommons, as it passed the second reading in the House of ommons, and as it passed the Committee stage in the ouse of Commons. On the Report stage, however, an nendment was moved to leave out the clause and insert nother one which was in the Bill before their lordships. he effect of that clause was that the protection which isted at the present moment against the use for vivi- ction purposes of a stray or lost dog was done away with. nder the clause which he proposed to leave out there ere two alternatives. A person who found a stray dog ad to take it to the police station. If the person did not ant to keep the dog the police took possession of it, and ey could not sell it for the purposes of vivisection. On e other hand, if the person who found the dog was a rson whose object it was to look for stray or lost dogs order to make money out of them by keeping them for month and then selling them for the purposes of vivi- ction what was to prevent him? If a person was not ry scrupulous and he found a dog with a collar on it he uld remove the collar and throw it away before taking e dog to the police station. In that case the identifica- on of the dog was to a certain extent lost and the profit nich the man was going to make was pretty sure. Know- g human nature and bearing in mind a case that occurred t very long ago when two dogs were found in a sack, d another case in which a dog had been taken off the orstep of its owner, and they were all found at an insti- tion where vivisection was carried on, he ventured to y that it was pretty certain that under this alternative the law there would be people who would take advantage it for the purposes which he had suggested. He would efer if their lordships left out Clause 2, that the clause nich was originally in the Bill should be reinserted. But did not wish to insist upon that if their lordships would ly leave out Clause 2. He hoped the House would sup- rt him because this was an insidious attempt to obtain stray or lost dogs for the purposes of vivisection.

Lord Dawson on Vivisection.

Lord DAWSON of PENN said that they had to consider o varieties of dogs. One was the owned dog. Was there y Member of that House who would not take any pre- ution necessary to preserve the owned dog to its owner? nen there was the stray dog, which wandered about ing out such a living as it could, uncared for, a misery to elf and a danger to the community. The extent of that oblem was shown by the fact that each year something e 30,000 stray dogs were destroyed in the City of London one. Was it not obvious, if there was to be the same ovision for both varieties of dogs, that the owned dog uld suffer? If they put an embargo on the use of the ay dog for experimental purposes, would they not corre- ondingly endanger the owned dog? The Bill provided tremely well for that contingency. Its provisions would lp in the identification of the owned dog and diminish e chances of mishap. Therefore it deserved the support that House. It was clear that the object of Lord Banbury s not the protection of the owned dog. Underlying all rd Banbury's remarks was this, that he was making this opportunity for a flank attack on the use of dogs for perimentation. He (Lord Dawson) would take up his allenge, for it was clear enough that the question of perimentation on animals stood or fell by the use or not dogs. Whichever way they approached this question experimentation on dogs, surrounding it by as much srepresentation of fact as they would—and there was subject he knew of which was more misrepresented than s—they always arrived at two aspects of the question. e first one was: Do material advantages accrue to nkind from experimentation on dogs and experimenta- n on animals in general? The second question, a totally ferent one, was: Whatever those advantages may be, t ethically justifiable that mankind should take advantage them?

The first question, whether material advantages accrued mankind, was surely a question for those people with lled knowledge. There was no one else who could give answer "Yes" or "No." Supposing, for example, at they were building a bridge across a river. They might cide the policy as to whether the bridge should be built not, but whether the bridge should be built of chrome el or manganese steel, or whatever the distribution of the stresses should be, would be left to the engineers. The problem of the engineer was nothing in comparison with the problems which arose in connexion with the body and mind of man. He would not trouble their lordships with too much on the question whether man did gain advantages from experiment or not, but there was this remarkable fact. We were accustomed to find experts differing materially, but on this question of experimentation on dogs there was such a consensus of opinion among the medical men of the civilised world that it amounted to a practical unanimity. They had recently had a conference representing every aspect of medicine and surgery, and of the sciences on which medicine and surgery rested. A more representative conference there could not be, and that conference said this to the British nation, that without experimentation on animals medicine and surgery could not carry on. He did not mean that they would not carry on; of course they would do their best; but, intellectually, they would come to stagnation. He would put the matter in another way. Supposing he were asked to find a staff for a hospital of, say, 200 beds in London, and had to find surgeons and physicians of sufficient standing on the one hand, and who would embrace the principles that Lord Banbury advocated. He had to tell the House that he could not find such a staff; it did not exist. That would indicate to the House to what extent medical unanimity prevailed.

The Ethical Aspect.

The honest opponents were those who approached the question from the ethical standpoint. He had in mind the man who said: "Whatever the advantages that accrue to mankind, it is ethically unjustifiable that you should make use of them." He respected that man, provided that he did not himself make use of those remedies in his time of trouble. It was a question for the public. They invited the public to answer that question. It was for them to say "Yes" or "No." If they said "Yes," by all means let them have the legislation which would make all these things illegal. That, at any rate, would be an honest and straightforward course. If, on the other hand, the answer was "No; we do not wish to stop these things," then he said: "For Heaven's sake leave us alone to go on with our work and do not harass us day by day and year by year." He had admitted that the question whether it was ethically justifiable to make use of experiments on animals should be decided by the public, and what was true of the dog was true of other animals. The medical profession told the House, with a real sense of responsibility, that they could not do without dogs—that they could not substitute other animals in every case. Their universal rule was that they never used an animal higher in the scale of creation than was absolutely necessary. They used the lowest animal possible, compatible with doing their best and getting successful results. In order that the public might be in a position to answer the question whether it was ethically justifiable, it would be of some profit if he tried to clear away a few misconceptions. He would take the question of pain. Was it likely that those of them whose upbringing had been in associating with pain from their student days were going to do anything which would needlessly increase pain when their whole careers were spent in assuaging it? They were not likely to be less sensitive than Lord Banbury on the question of inflicting pain. On the contrary, they knew more about it and what it meant. Therefore he would not waste time in dwelling upon any question of the indifference of the medical profession to pain. As to the 30,000 animals that were anæsthetised every year, all they asked was that they should be made use of not only for the benefit of mankind, but for themselves. It must be borne in mind that the large majority of experiments on animals were carried out under anæsthetics, and the dogs and other animals were completely ignorant of what was going on. He would go further than that. He would admit that there were a minority of cases where animals were given diseases in order to aid in the diagnosis of disease in man. He admitted, further, that there were, from time to time, what they called survival experiments. He would tell their lordships exactly what survival experiments meant. A greater part of the treatment of gastro-intestinal disease in modern times depended mainly upon experiment on animals. One of the most distinguished men of modern times was Prof. Pavlov, of Russia. As an example, he would take the case of a man who was going to be short-circuited for duodenal ulcer. They might take his pain and distress and divide them into three parts. There was, first, the stage of anticipation. There was that stage when he had to make up his mind to face the risks to himself and his family, and when he said to himself, "Supposing I do not survive. What is going to happen to me in my profession?" All these agonies of mind far exceeded distress of body. Man had to go through all that, not the animals. The animal had none of that, and he had no power of anticipation whatever. The second stage was that of the actual operation of short-

circuiting. There the man and the animal were on a par. They were both under anæsthesia and both felt nothing. The third stage, in some respects the most distressing of all, was that terrible process of building up the man's health after illness, the time of shock, of convalescence. Let them contrast man and animal there. The man might be weeks and months before he was well. In the case of the animal, what happened? They might have an operation on a dog for short-circuiting and the same day it would be playing about with its owner. In the case of an experiment on a monkey, he had himself seen the animal, within 24 hours, sitting on his perch eating a banana. That horrible process of getting well, of recovering from shock, was entirely unknown to the animal. The fact was that it was a slavery of terms. If they read in the papers that one of their lordships had been vivisected and that his appendix had been removed, they would be distressed and horrified; but if they read that he had been operated upon, they would think nothing of it. There was no difference between the one and the other. What had happened to the animal had happened to the man, but what happened to the man was infinitely greater, tenfold or a hundredfold greater, than what happened to the animal. It was necessary to understand what the implication would be if a measure for suppressing experimentation on animals were passed. It would affect the whole range of medicine—the diseases of the gastro-intestinal tract, typhoid, lockjaw—he could go on with a list which would occupy too much of their attention on an afternoon like that. Much of what we knew about gall-stones, dogs had told us. Take jaundice, including the malignant jaundice of dogs. Whereas at one time a dog stricken with malignant jaundice nearly always died, since the discovery of trypan blue the majority of dogs stricken with this disease were saved. In the investigation of disease that animal had to be used which the particular problem required. For instance for the investigation of infantile paralysis, the monkey was the only animal which it was of use to employ. Again, take the case of tetanus. He would not wish that anybody should repeat the war-time experience what that terrible disease was.

Inconsistency of Antivivisectors.

It was important for people to know the consequences of removing from medicine all these results based on experimentation on animals. They had only got to be understood by the public, and then he had no doubt what the public would say. This result would have happened long ago but for the fact that the propagandists against vivisection were not themselves subject to their own gospel. If a propagandist against vivisection was stricken with any of those diseases, he gave an implicit, if not an explicit, consent to vivisection. If those who were against all experimentation on animals were, in their own persons or in their own families afflicted with disease, did their lordships for one moment suppose that they did not adopt the remedies which were based on experimentation? He could assure them that with few exceptions they did adopt them; and was it to be wondered at? Imagine the crisis of love and life in the balance, the crisis of anxious illness. At such a time the theories of the comfortable armchair gave place to more commonsense and reasonable ideas.

He would not be hard on their inconsistencies. Life would be a drab and dreary business if we were always consistent. If the uses of new drugs could not be worked out on animals, the alternative was to work them out on human beings. Perhaps Lord Banbury would form a band of people of conscientious convictions who would allow the medical profession to work out new drugs on them! When it came to working out new drugs like pituitrin, adrenalin, and digitalin, the question was whether it was better to work them out on animals before they transferred their use to human beings. He would not say anything against inconsistency if in the hour of trouble the philosophy of antivivisection broke down. He would think humanly of that, but what surpassed the limits of tolerance was that these people could get these remedies when they liked, and yet they were constantly disturbing the minds of unknowing and innocent people in our hospitals.

Hospital Difficulties.

All hospitals in this country were up against the difficulty of getting funds at the present time. They made an appeal in their distress and then along came these fanatical people. They put advertisements in the daily press, they inveighed against the hospital, they sent letters to all the subscribers, and they did their best to spoil the appeal for funds. They appealed to the ignorant and the unknowing by misrepresentations which might be called gross, and by that means they were destroying the flow of charitable funds. Yet let one of these propagandists himself be ill and all he had to do was to go to a private doctor and not suffer at all. They might take it that that was the general rule. He would give an example. They had the terrors of lockjaw in the war, when they found people dying of convulsions which could only be described as agonising, because the were convulsions right up to the point of death, and con sciousness was preserved up to the point of death. The adopted the plan after most interesting investigations c using a serum against lockjaw. The effect on the mortalit from tetanus in the war was that it came down to quit small proportions. Since the war it had been the rule fc all well-ordered hospitals to have constantly in stock ant tetanic serum, because street accidents were brought i from time to time, and it was the rule that directly a stree accident was brought in antitetanic serum was injectec That was contrary to the principles of the antivivisectionis There was a hospital in London where they would not us antitetanic serum. A street accident was brought in an they refused to give the serum and the patient died of loc jaw. What was more, two other patients subsequentl died of lockjaw at this hospital; and they called tha hospital a charity! He called it a place for propagandis and nothing more, and he hoped that King Edward's Fun would take note of this episode and would not give tha hospital a certificate that it was a charity ready to trea the maimed and the wounded by the best methods know to science at the present time. At the same time as thes poor people—the workers, who had no choice where the should be taken—were taken to this hospital, would th governors of the hospital or their children if they got a injury in a street accident go without antitetanic serum Not at all; they would go home and call in their priva doctor and it would be given. The fact was that it w an impossible situation. What it amounted to was th these people were practising their theories on the do only this time it was the human dog, and the world suffer thereby. He put it to their lordships that the health the nation was a momentous matter not to be treat lightly, but to be treated seriously, and not made th playing-ground of vain imaginings, of misguided though and he asked the House to reject Lord Banbury's amen ment.

Discussion on the Bill.

Lord DANESFORT asked the House not to allow Lo Dawson on an occasion like that to use the debate for t purpose of justifying the vivisection of stray dogs a introducing a totally irrelevant question into the discussio He would certainly support the amendment.

The Earl of STRADBROKE (Parliamentary Secretary the Ministry of Agriculture) said the clause under discussi which Lord Banbury desired to eliminate was inserted the request of and after very long and careful considerati with various associations connected with the protecti and care of dogs, and he thought they would agree th the clause as it now stood gave a stray dog a better chan The societies that came and discussed the question of th clause and agreed upon it were the Royal Society for t Prevention of Cruelty to Animals, the Canine Defen League, the Battersea Home for Lost Dogs, and the Glasg Dogs Home. Up to the present no objection had be lodged at the Government Department against this clau and therefore it was a surprise that this amendment shou have been put down. It was the Government's view th the Bill would be better as it stood.

Lord BANBURY said that though he was against d being vivisected he was not an antivivisectionist. He d not raise the question. Having been defeated he had n attempted to bring on the Bill again in the House. If noble lord wanted to buy a dog in a legitimate way t law allowed him to do so, but it was another thing to s that if he (Lord Banbury) lost his dog it was to be a char for some person who found it to keep it a month and th sell it for vivisection.

The Marquess of SALISBURY (Lord Privy Seal) oppos the amendment. He said that if Lord Banbury had p posed to replace the clause with another which would ha equally achieved his end and perhaps secured the pa cular view he held on vivisection, that would have be different, but what he did was to eviscerate from the Bill e of its essential clauses without putting anything in its pla

The amendment to omit the clause was rejected 33 votes to 5. The Bill was read the third time and pass

HOUSE OF COMMONS.

WEDNESDAY, JULY 11TH.

Coroners Act, 1887, Amendment.

Mr. MORRIS asked leave to bring in a Bill to amend Coroners Act, 1887. He said that the object of the was to amend Section 4 (3) of the 1887 Act, which rela to the power of a coroner's jury to find a verdict of mur against the person accused. Subsection (3) indicated t a coroner's jury had to inquire who the deceased was, h when, and where the deceased came by his death, an

e came by his death by murder or manslaughter, the ersons, if any, who the jury found had been guilty of such urder or manslaughter. This amending Bill would cut out at part of the subsection with such consequential amend-ents as might be necessary in the remaining parts of the ct which related to the naming of the person found guilty f murder. The coroner's court was a very ancient court, nd in the development of its history it had gradually ome to occupy a very different position from that which it itherto occupied in the administration of justice. The bject of putting the provision in the Act originally was that e coroner's court was regarded as providing a collateral ecurity for the prevention of crime. To-day, although a roner's warrant could commit a person for trial and had e effect of an indictment, and was equivalent to the nding of a Grand Jury at the Assize Court, it was the ariable practice—although it was not necessary in law r the accused person to be brought before a magisterial ourt—for the magistrate to examine the case and come to decision whether a prima facie case had been made out. was not therefore necessary in the present circumstances have an inquiry, especially under the conditions of xamination conducted before the coroner's court. There ere very strong objections to the present procedure. The roner's court was not bound by the rules of evidence. ny evidence could be admitted. He was seeking in this ill to provide that a coroner's jury should be limited to nding the cause of death alone. The Act of 1926 was nsatisfactory. The position was this: If a person had een arrested during the time of the coroner's inquest on a harge of murder the coroner should then suspend the quest pending the conclusion of the trial. If the magistrates und there was no prima facie case they had a position here there was no conclusion to the criminal proceedings indictment and the present law left it still open for the roner to go on with the inquest and for the jury, notwith-anding the fact that the magistrates had thrown out the se, to find the person guilty of murder. That was a very logical state of the law and for that reason he had brought this amending Bill.

Leave to bring in the Bill was granted without a division.

Diagnosis of Small-pox Cases.

Mr. GROVES asked the Minister of Health whether, in iew of the fact that the cases of small-pox occurring in ondon at the present time were so mild as to be hardly istinguishable from chicken-pox, and also of the fact that rtain medical men believed they were not small-pox at l but alastrim or a new disease, he would issue fresh gulations permitting medical officers of health to leave em in their own homes and not put the patients to the scomfort and the ratepayers to the expense of having em removed to the small-pox hospital.—Mr. CHAMBERLAIN plied: I am advised that the small-pox now prevalent in is country should not be confused with chicken-pox or me new disease, and in view of the risks to the public alth which would be involved by its further spread, I n not prepared to countenance the course suggested by the n. Member.

THURSDAY, JULY 12TH.

Ex-Service Men and Medical Treatment.

Mr. STEPHEN asked the Minister of Pensions what remedy ex-Service man had when he was recommended by the inistry for treatment at home by his panel doctor and the anel doctor certified that treatment by the Ministry was ecessary.—Major TRYON replied: Where it had been cided that a case was either not eligible for or did not quire such a course of treatment as is provided by the inistry of Pensions the case would fall to be dealt with nder the ordinary arrangements available to insured persons nder the National Health Insurance Acts.

Mr. STEPHEN: If the Minister decides that treatment is ot possible and the man's panel doctor considers that eatment by the Ministry is necessary what step has the an then to take?

Major TRYON: It is quite clear that the Ministry cannot cept the doctrine that a panel doctor can decide for them. the man has a grievance against the panel doctor the rmal course would be for him to make an application to e insurance committee.

Mr. STEPHEN: But supposing the man has no grievance gainst his panel doctor; supposing that he considers that e advice of his panel doctor is right, is there not a medical feree whose opinion the Ministry and the panel doctor an be asked to accept? If there is not, will the Minister t up such a referee?

Major TRYON: No, Sir. The ordinary course must be llowed. The case would be considered by the doctors of e Ministry of Pensions whose opinions must necessarily cide the action to be taken by the Ministry.

Mr. STEPHEN: Does the Minister say that the doctors of e Ministry must be the final arbiters in spite of the fact that equally eminent or more eminent medical men may say that the man ought to have treatment?

Major TRYON: No, Sir. The point is that the Ministry of Pensions must decide its own policy and not the panel doctor.

Mr. HARRIS: When doctors disagree would it not be possible to have an independent opinion from a specialist, because it is notorious that doctors often differ on medical points?

No further answer was given.

Medical Certification in a Case of Lead Poisoning.

Miss LAWRENCE asked the Secretary of State for the Home Department if his attention had been drawn to the case of Reginald Aubrey Wild, who contracted lead poisoning while working for Messrs. Locke, Lancaster, and W. W. and R. Johnson and Sons, Limited, of Millwall; whether he was aware that on application to the certifying surgeon for a certificate the same was refused, the certifying surgeon being the same doctor that was in the service of the employers; that the medical referee for the district, who formerly was the employer's doctor, had given a decision that the man was suffering from lead poisoning, but that he was not disabled; and whether, seeing that Mr. Wild was an in-patient in the London Hospital, suffering from lead poisoning, from April 20th until May 14th, after receiving a week's notice on April 15th, he would arrange for the man to be examined by a medical referee attached to another district as, until he was certified, no claim could be made for compensation.—Sir WILLIAM JOYNSON-HICKS replied: The decision of the medical referee under the Act is final, and I have no power to intervene in the manner suggested. I am, moreover, satisfied on inquiry that this case has been most carefully and conscientiously dealt with both by the certifying surgeon and by the medical referee, and I strongly deprecate the implication that these gentlemen, both of whom are medical practitioners of high standing, may have been influenced in carrying out their statutory duties by their connexion with these works. The certifying surgeon is responsible in his official capacity for the periodic examination of workers employed in lead processes under the Lead Compounds Regulations; he also, I understand, periodically examines the other workers and examines workmen newly employed, but has no other interest in the firm. The medical referee used to carry out some three years ago the periodic examinations required by the regulations, but he did this under special appointment from the Chief Inspector of Factories, and he was not, I am informed, otherwise engaged by the firm.

Miss LAWRENCE: In view of the fact that the medical referee for the district did not confirm the decision of the certifying surgeon, and that the certifying surgeon is employed in the manner detailed in the question, does not the right hon. gentleman think that some further inquiries should be made?

Sir W. JOYNSON-HICKS: I have made a very careful inquiry into the position of both these medical gentlemen and their connexion with the firm is very slight, and really, as far as the actual certificate of the medical referee is concerned under the Act that is final, and I have no power to intervene.

Mr. T. WILLIAMS: Is the right hon. gentleman aware that injured workmen practically all over the country have little or no confidence in certifying surgeons who are receiving large fees from employers and then acting for those same employers?

Sir W. JOYNSON-HICKS: In this case the suggestion cannot possibly be made. There is no question of a large fee being received from employers. As far as the general statement made by the hon. Member is concerned, I must really ask him to let me have at least a few of the details of these cases and then I will go into the matter at once, as he has made a very serious charge.

Miss LAWRENCE: I want to ask the right hon. gentlemen whether he has considered the conflicting medical opinions in this case and whether, in view of the conflict of medical evidence, it is not possible to arrange for another examination. The first doctor said that the man had lead poisoning, the second doctor said that he had lead poisoning, but was not disabled, and the third doctor, an independent doctor at the hospital, certified him as actually sound. In view of that conflict of medical opinion cannot the right hon. gentleman have another examination?

Sir W. JOYNSON-HICKS: I will get into communication with the third doctor who the hon. lady says is independent, and ask him to let me have a report on the case. (Cheers.)

Removal of Manchester Tuberculosis Clinic.

Sir THOMAS WATTS asked the Minister of Health if his attention had been called to the objections raised by the residents in the Oxford-road district of Manchester to the proposed removal of the tuberculosis clinic from Hardman-street to that district, and what action he intended to

take.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. I proposed to arrange for a local inquiry before coming to a decision on this proposal.

Mr. HORE-BELISHA: Is it not a fact that in the debate in this House the unanimous view was expressed that this appeal tribunal should be established, and has the hon. and gallant gentleman considered this matter since that debate?

Lieut.-Colonel HEADLAM: I should dispute the fact that the opinion of the House was unanimous on that subject, and it is since that date that the decision has been arrived at.

Commander WILLIAMS asked what was the sickness in respect of which most of these people were invalided out?

Lieut.-Colonel HEADLAM: I cannot say off-hand, but I should say that it was tuberculosis.

Mr. HAYES: Was the matter considered by the Board of Admiralty or by an independent medical board?

Lieut.-Colonel HEADLAM: The Board of Admiralty considered the subject and consulted an independent medical board on the whole subject—not as to the tribunal, of course.

Compulsory Registration of State Nurses.

Mr. ERNEST BROWN asked the Minister of Health if it was the policy of the Government to make State registration compulsory for hospital nurses in Government establishments.—Mr. CHAMBERLAIN replied: The only Government establishment where nurses are employed for which I am responsible is the Rampton State Institution for Mental Defectives. So far as that establishment is concerned the answer to the question is in the negative.

MONDAY, JULY 16TH.

The Rating of Hospitals.

The House considered the Rating and Valuation (Apportionment) Bill on Report.

Mr. HARRIS moved a new clause providing that the expression "hospital hereditaments" should mean a hereditament occupied and used as a hospital, but should not include a hospital run for private profit or gain. He said that the work of the hospitals was an industry which had suffered severely since the war. During the last few years the strain on the voluntary system had been almost at breaking-point. Masses of people were implored to give money to the voluntary hospitals, and then it was handed back to the ratepayer in the form of taxation. Rates on the hospitals were tantamount to a tax on benevolence, on the sick poor, and on medical science.

Mr. CHAMBERLAIN (Minister of Health) pointed out that the Bill was not a plan for reconsidering the whole system with a view to deciding what kind of property might with advantage be relieved of rates. It was a special proposal which the Government were making for the stimulation of industry, and it was a far-fetched suggestion, indeed, to attempt to bring hospitals within the definition of industry. Although he had expressed a certain sympathy in this matter, he did not wish to be taken as having said that he was in favour of any particular scheme for derating hospitals. If the question were to be considered, they could not stop at hospitals. There were other kinds of property for which arguments on similar lines could be properly made, and he did not wish to be taken as having accepted the principle, as he had not given the question that consideration which would be necessary before he expressed a definite opinion. Certainly one recognised that there was a good case for the relief of the voluntary hospital, and with that he must content himself on that occasion. It might be that, on some future occasion, they would have some general scheme which would relieve various classes of property which were rated to-day, and on such a scheme the question of hospitals would properly find a place, but it was not appropriate to discuss it in a Bill designed to find a way to relieve industry.

Sir H. CAUTLEY pointed out that the assessment of the Sussex County Hospital had been put up to ten times what it was before. He hoped that, if he could, the Minister of Health would be able to do something for the hospitals under this Bill, or that he would exert some influence at once to put the provincial hospitals—although it applied also to the London hospitals—on some consistent footing throughout the country. Otherwise a very great number of them would have to shut down, because they could not possibly stand this enormous increase in their assessments.

Mr. GROVES said that if relief could be given to industries, surely the large London hospitals could be assisted. Many of the hospitals had had to close down a number of beds for lack of funds. They ought to make up their minds that the great medical and surgical institutions of the country were industries, because they really were shops wherein the bodies, and sometimes the minds, of the working population were repaired. Hospitals were a necessary adjunct to the industrial life of the community. One sweet thing about the hospitals was that they did not ask what a patient's politics were. In trying to restore people to health they were performing a function which was as essential to the well-being of the country as the work of any industry. He begged the Minister to reconsider his attitude to the amendment.

Mr. E. BROWN said that the amendment was within the scope of the Bill. The great hospitals and infirmaries were vitally linked up with the purposes of industry, and what was true of Glasgow, was true of Edinburgh and Leith, and of all the great cities up and down the country.

Dr. VERNON DAVIES said that he would have been very pleased if he could have accepted the arguments of the Opposition in favour of the amendment, but he could not persuade himself that the Bill was one for the relief of voluntary hospitals. The argument had been used that hospitals might be regarded as productive, in that they helped to produce medical men and nurses. But where was such an argument to stop? They might have relief of rates for theological colleges because they produced clergymen, and for political colleges because they were producing politicians. The question of the relief of hospitals was an entirely different one, and he did not see how it could come under this Bill, much as he would like it to do so, because the hospital question at present was undoubtedly serious. He believed that the Minister of Health had that fact well before him and was as anxious as anyone to deal with it. Attempts had been made to prove that breweries, which were to be relieved of rates, were a prolific cause of work for the hospitals. That might have been so in the past. In the old days it was not an uncommon thing to have patients in the hospitals as the result of alcoholic excess; but it was well known that there had been a great reduction in disease due to such excess. In his student days it was quite a common occurrence to come across cases of what were called "beer drinkers' heart," but at present they were the greatest rarities in clinical medicine. He believed also, that cases of cirrhosis of the liver were markedly decreasing.

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) asked the House to reject the amendment. He said that the voluntary system so far as the hospitals were concerned was not fading away but was very firmly based. A great measure of the support came from the workers concerned. Everyone would be glad to assist the voluntary system, but they had to consider whether this was an appropriate place to do so. This derating plan was a scheme to help productive industry and, if possible, lessen the burden of necessitous areas. So far as the voluntary hospitals were concerned, the Central Valuation Committee had made some valuable suggestions. If the advice was followed it would do away with many difficulties.

The clause was negatived by 219 votes to 110—majority 109.

TUESDAY, JULY 17TH.

Wireless for Medical Service in Shetland.

Sir ARCHIBALD SINCLAIR asked the Postmaster-General whether experiments in the establishment of communication by wireless between the island of Foula and the mainland of Shetland for medical service purposes had proved to be successful; and if so, whether, in view of the need for the improvement of communication, particularly on the ground of public health, between the island of Stroma and the mainland, the Government would consider making similar arrangements for the installation of wireless telephones on this island.—Sir W. MITCHELL-THOMSON replied: So far as I am aware, no experiments in the establishment of wireless communication between Foula and the mainland for medical purposes have yet taken place; and the second part of the question does not therefore arise.

Woman Lunacy Commissioner in Scotland.

Viscountess ASTOR asked the Secretary of State for Scotland what were the duties allocated to the lady assistant commissioner employed under the General Board of Control for Scotland.—Sir J. GILMOUR replied: The normal duties of the lady deputy commissioner consist of visiting lunatics and mental defectives under guardianship in private dwellings throughout Scotland. Occasionally she inspects lunacy wards of poorhouses.

Royal Commission on Local Government.

Mr. CRAWFURD asked the Minister of Health when the Report of the Royal Commission on Local Government was likely to be presented.—Sir KINGSLEY WOOD replied: It is understood that the Royal Commission hope to present a Report on certain questions within their terms of reference towards the beginning of November.

ENLARGEMENT OF ST. MARY'S HOSPITAL, PADDINGTON.—Lord Iveagh last week opened an extension which includes 60 additional beds and two operating suites, together with many domestic and sanitary improvements. The cost has been £60,000, of which £52,000 has been subscribed.

Medical News.

UNIVERSITY OF OXFORD.—At recent examinations following candidates were successful in the undermened subjects :—

B.M. AND B.CH.

edicine, Surgery and Obstetrics.—O. A. Beadle, M. V. Bhajekar, W. H. Brown, T. L. Davies, E. R. Holiday, A. J. Leslie-Spinks, J. M. A. Melly, A. E. Porritt, L. T. Ride, H. G. Wells, Florence H. Johnson, and Alice D. K. Peters.

athology.—A. D. Bell, T. M. Gledhill, R. D. Harding, H. C. Harley, Eugene Harvey, Francis Hawking, E. R. Holiday, K. N. Irvine, J. M. Lees, A. W. D. Leishman, J. C. Nicholson, N. C. Parfit, A. B. Stokes, R. L. H. Townsend, W. B. Williams, and Ruth Sandeman.

ateria Medica.—H. J. B. Atkins, F. W. Brown, N. P. Bruce, T. M. Davie, R. D. Harding, J. H. Hunt, J. E. Jenkins, C. J. King-Turner, J. C. Leedham-Green, A. W. D. Leishman, R. C. MacKeith, J. N. O'Reilly, R. S. B. Pearson, B. T. Squires, A. B. Stokes, W. S. Tegner, H. A. Treble, H. C. Wadge, Olive M. Capper Johnson, Winifred Mercer, and Elspeth W. Smellie.

rensic Medicine and Hygiene.—M. V. Bhajekar, George Campbell, B. R. Caygill, R. M. J. Harper, E. R. Holiday, F. G. Parker, H. G. Pritchard, C. R. Salkeld, D. C. Shields, Florence H. Johnson, Caroline E. MacNeice, Alice D. K. Peters, and Joyce Wright.

Master and Fellows of University College have awarded Radcliffe Scholarship in Pharmacology to H. J. B. Atkins J. H. Hunt. The Theodore Williams Scholarship in ıology has been awarded to Frank Williams.

NIVERSITY OF CAMBRIDGE.—At recent examina- the following candidates were approved :—

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

rt II.—Edwin Amarasinghe, Oliver Chance, J. C. Coutts, F. J. Farr, D. L. Greig, D. A. Imrie, Leila K. Keatinge, D. F. Lawson, C. J. R. Morrison, H. C. Pillsbury, B. K. Roy, Tokue Takahashi, Edgar Thorpe, E. J. E. Topham, J. D. H. Wearing, and F. G. Wood.

OYAL COLLEGE OF SURGEONS OF ENGLAND.—At quarterly meeting of the Council held on July 12th Berkeley Moynihan was re-elected President and Prof. Hey Groves and Mr. V. Warren Low were elected Vice-idents for the ensuing collegiate year. Mr. F. J. Steward, . L. P. Gamgee, Mr. R. G. Hogarth, and Prof. R. E. y, the newly elected members of Council, were introduced, having made the necessary declarations took their in the Council. Mr. D. K. Cassels, M.A., who has been stant to the Secretary since 1924, was appointed stant Secretary to the College.

ıe following professors and lecturers were elected for nsuing year :—

nterian Professors.—Sir Arthur Keith, Mr. Arthur H. Evans, Prof. G. E. Gask, Prof. C. A. Pannett, Mr. R. J. M. Love, Mr. C. P. G. Wakeley, and Mr. R. T. Payne.

ris and Gale Lecturer.—Mr. Henry Albert Harris.

asmus Wilson Lecturers.—Mr. T. W. P. Lawrence and Mr. C. E. Shattock.

nott Demonstrator.—Sir Arthur Keith.

plomas of Member were conferred upon the following have passed the necessary examinations and have plied with the by-laws : Nellie Brown, Westminster ; . Nimbalker, Bombay, Sheffield, and Middlesex.

ıe diploma of Fellow was also conferred upon J. C. B. ı, Sydney, Guy's, and St. Bart.'s.

cences in Dental Surgery were conferred upon the wing candidates who have passed the requisite examina- and have complied with the by-laws of the College :— B. Bergh, Guy's ; S. Borson, London ; D. J. Bull and S. G. Caston, Guy's ; R. E. Clarke and Dorothy G. Coutts, King's Coll. ; A. H. Crowley and E. M. Douglas, Guy's ; D. H. A. Edmondson, Liverpool ; W. Foster, Guy's ; G. Giloi, Royal Dental ; J. W. H. Jones, C. L. Knight, and H. M. Norman, Guy's ; W. O'Reilly and D. V. Pandit, Univ. Coll. ; H. J. Phillips and R. A. Phillips, Bristol ; J. W. Pound, Guy's ; R. A. Richardson, Royal Dental ; D. E. C. Robertson, Guy's ; W. S. Ross, Royal Dental ; J. Seller, London ; W. H. Shrigley, Guy's ; R. S. Taylor, Royal Dental ; F. C. Tomlyn, Guy's ; F. Trainin and J. N. van der Merwe, Royal Dental ; F. W. Walder, Univ. Coll. ; W. J. Watson and G. H. S. Weir, Guy's.

ıe under-mentioned diplomas were conferred (jointly the Royal College of Physicians) upon the following idates :—

ploma in Laryngology and Otology.—J. Acomb, N. Attygalle, H. K. Basu, N. E. H. Box, C. H. Carroll, G. D. Malhoutra, T. G. Millar, A. A. Miller, G. W. Morey, W. J. Robertson, E. M. Steel, D. B. Sutton, and M. R. Wadia.

ploma in Psychological Medicine.—Norah A. Haworth, R. Levinson, Agnes M. Macgown, J. J. B. Martin, A. Pool, and G. M. Tothill.

UNIVERSITY OF LEEDS.—At recent examinations the following candidates were successful :—

M.D.

A. Cannon, H. Sugare, and Gretta M. Wardle.

FINAL EXAMINATION FOR M.B., CH.B.

Part II.—S. G. Bedford, S. K. Foster, W. Greaves, Dorothy Halstead, P. Hampshire, L. B. Heseltine, C. R. Hiley, H. Hopkinson, J. R. O'Neill, T. L. Owen, N. Pyecroft, Doreen M. Robertshaw, Mary G. Shawe, L. Silman, L. Smith, J. O. Terry, Ivy R. Watson, and J. E. H. West.

Part III.—*L. Brill, *L. B. Heseltine, *J. H. Kahr, *V. P. Squire, C. R. Adgie, D. W. E. Burridge, H. W. Davis, L. Godlove, R. C. Hanson, A. Milner, J. P. O'Donnell, J. R. O'Neill, A. Reichlin, and J. E. H. West.

* Second-class honours.

D.P.H.

H. M. Holt.

FINAL EXAMINATION FOR L.D.S.

Part II.—W. Bedford, B. Taylor, and S. R. Woodcock.

UNIVERSITY OF LIVERPOOL.—At a graduation ceremony on July 7th medical degrees were conferred on candidates whose names appeared in our last issue (p. 100) as having passed the requisite examinations. The Ethel Boyce Fellowship in Gynæcology was awarded to Dr. Gwyneth Griffith ; the Robert Gee Fellowship in Human Anatomy to Dr. E. N. Wardle ; the J. W. Garrett International Fellowship in Bacteriology to Dr. J. S. Logan ; the Holt Fellowship in Pathology to Dr. J. F. Galloway ; the Holt Fellowship in Physiology to R. K. Bowes ; the Johnston Colonial Fellowship in Biochemistry to Dr. L. Earlam ; the Thelwall Thomas Fellowship in Surgical Pathology to Dr. R. Y. Dawbarn ; the Samuels Memorial Scholarships to Dr. A. L. Kerr (Surgery) and Dr. M. M. Datnow (Obstetrics and Gynæcology) ; the John Rankin Fellowship in Anatomy to Dr. J. B. Rushton ; the University Graduate Scholarship in Medicine to J. Libman ; and the John Rankin Exhibition in Practical Anatomy to W. S. Diggle and T. L. Hughes.

UNIVERSITY OF MANCHESTER.—Dr. G. H. H. Booth has been appointed Demonstrator in Anatomy.—The Council have adopted regulations for the Dr. Robert Angus Smith Scholarship, which has been founded for the encouragement of research in sanitary science. The scholarship will be offered for the first time in June, 1929.

UNIVERSITY OF BELFAST.—The Senate of the Queen's University have appointed Dr. E. B. C. Mayrs to the chair of pharmacology and therapeutics, and Dr. F. M. Allen to be lecturer in materia medica and therapeutics.

INDUSTRIAL WELFARE SOCIETY.—At a lecture conference to be held by this society at Balliol College, Oxford, from Sept. 7th to 11th, an address on Nervous Disease and its Significance in Industry will be given by Dr. Millais Culpin.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—An anonymous gift of £50,000 has been received by this Association, as a result of which the total sum collected in connexion with a special appeal exceeds £110,000.

The fourteenth annual conference will be held at the B.M.A. House, Tavistock-square, London, W.C., on Oct. 15th and 16th. Sir Arthur Stanley will preside, and the subjects of discussion will include the Occurrence of Tuberculosis among Primitive Peoples and the Principles underlying a Scheme of Antituberculosis Measure in Any Country. A number of Canadian tuberculosis officers visiting Europe will attend the conference and take part in the discussions. The sessions will be open to all persons interested in tuberculosis on payment of a fee. Names should be sent as soon as possible to the secretary, at 1, Gordon-square, London, W.C. 1.

WILLIAM HARVEY AND ABERDEEN.—At the June meeting of the Aberdeen Medico-Chirurgical Society Dr. Thomas Fraser took the chair, and Prof. J. MacWilliam, F.R.S., gave an address entitled "Reflections on Harvey's Work." He laid stress on the profound significance of Harvey's great achievement, not only in its obvious applications of fundamental importance in physiology and medicine, but also for the change which it led to in the general attitude of mind towards the problems of the animal organism, introducing a new spirit and method into the study of their relation to the forces and processes of the external world. Dr. W. Clark Souter read a paper on the visit to Aberdeen of Dr. William Harvey in 1641, when he was made an honorary burgess of the city. Dr. Souter showed a number of lantern slides on this and other Harveian topics, and a series of portraits of Harvey, giving his views on the authenticity and origin of the Harvey portrait in the society's possession, a gift from Sir Walter Farquhar in 1915.

MEMORIAL TO A LEEDS SURGEON.—A bas-relief to the memory of Lieut.-Colonel Harry Littlewood has just been unveiled at Leeds General Infirmary, of which he was surgeon from 1893 to 1921. It has been subscribed for by his colleagues, who have also contributed to the equipment of the instructional block at the infirmary. The portrait represents him in his uniform as administrator of the Second Northern General Hospital at Beckett's Park during the war. Colonel Littlewood had retired when the war broke out, and his war-time labours are believed to have shortened his life.

BIDDULPH GRANGE ORTHOPÆDIC HOSPITAL.—In June, 1924, the Prince of Wales opened Biddulph Grange, in North Staffordshire, as an orthopædic hospital for the county, but within less than a year it had to be closed for lack of financial support. It was subsequently purchased by the Lancashire County Council for a similar purpose, and has just been formally opened. The institution is intended to serve the Manchester area, from which it is no farther distant than if it were in some suitable part of Lancashire itself. There is accommodation for 85 children, and the building can readily be enlarged.

HOSPITALS IN CEYLON.—At present modern hospital facilities in Ceylon are obtainable only at the great Colombo General Hospital of some 700 beds. A committee appointed by the Executive Council of the island, which has been considering the situation, recommends that central hospitals should be established at Kandy, Galle, and seven other out-stations, and that, save in exceptional cases, no small hospitals should be maintained. It is further recommended that there should be an increase in the number of itinerant medical officers so that first-class surgical and medical resources should be available all over the island.

BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH.—At a recent meeting of the trustees Mr. W. G. A. Ormsby-Gore, M.P., Under Secretary of State for the Colonies, and the Earl of Onslow, Under Secretary of State for War, were appointed trustees in place of the late Sir Arthur Shipley, F.R.S., and the late Lord Cave. Sir James Kingston Fowler (hon. secretary) began his report by referring to the election of Dr. David Keilin—who had been the first student to hold successively Junior, Fourth Year, and Senior Beit Fellowships—to be an F.R.S. It was now very difficult, he said, to describe the work of the Fellows on medical and allied sciences in a form intelligible to those not engaged in them; but an exception might be made in the case of Dr. Edward Hindle's research on yellow fever. Dr. Hindle, who was appointed last year to the newly established Beit Fellowship in Tropical Medicine, began work in January, and "in the short period which has since elapsed has obtained results in the course of a research on yellow fever which give good ground for the belief that a vaccine has been discovered which will afford protection against that disease." He has shown "that a vaccine prepared from the livers of infected monkeys will protect a monkey from the effects of a dose of the virus ten thousand times as great as the fatal dose, and the monkey continues to be healthy and lively." It has still to be ascertained, said Sir James, what are the best methods of preparing and of administering the vaccine; what is the dose necessary to afford protection; how long the protection will last; and whether the results obtained with monkeys are also true of man.

It was stated that Mr. Alan Sterling Parkes, D.Sc., and Miss Honor Bridget Fell had been promoted from Fourth Year Fellowships to Senior Fellowships. The following appointments to Junior Fellowships are announced for research into the subjects indicated:—Juda Hirsch Quastel, D.Sc. Lond., Fellow of Trinity College, Cambridge: extension of work on the chemistry of bacteria and of complement fixation. Percival Walter Clutterbuck, Ph.D. Manch., F.I.C., assistant lecturer in chemical physiology in the University of Birmingham: nature and function of the succinoxydase system of muscle and investigation of the enzymic systems concerned in carbohydrate metabolism. Bryan Harold Cabot Matthews, B.A. Camb., at present demonstrating in physiology at the University of Cambridge: conduction in sensory nerve-fibres, and the characteristics of sensory end-organs. Douglas Roy McCullagh, M.Sc. Manitoba, at present working at the Sir W. Dunn Institute of Biochemistry, Cambridge: studies in carbohydrate metabolism. Wallace Russell Aykroyd, M.D. Dub., now doing research in the School of Physiology, Trinity College, Dublin: an inquiry, at the Lister Institute, London, and in Newfoundland, into deficiency diseases and their relation to diet.

Correspondence concerning the Fund should be addressed to the hon. secretary at 35, Clarges-street, London, W.

"RE-ENDOWMENT" OF GUY'S HOSPITAL.—' treasurer's annual report states that "the time has c for the re-endowment" of the hospital, the adverse bal of income and expenditure having steadily accumulated, it now exceeds £100,000. "The great success of the hosp during two centuries has very largely sprung from freedom from financial anxieties of her administrato and the governors feel that the position must be fa Re-endowment, it is pointed out, involves the provisio half a million of money, which "constitutes a very ser call to the wealthy." Meanwhile it is recorded that reconstruction of certain wards has been completed, that 10 per cent. has been added to the accommodat Last year 10,795 patients passed through the wards, w caused an appreciable reduction in the waiting list. average stay of each patient, both medical and surg was reduced by rather more than a day. Out-pati made the enormous total of 537,676 attendances, at a of 1s. 7¼d. per attendance. The provision of the out-patient department is being delayed by difficultie clearing the site for the extension.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &

NORTH-EAST LONDON POST-GRADUATE COLLE Prince of Wales's General Hospital, Tottenham.

MONDAY, July 23rd.—2.30 to 5 P.M., Medical, Surgical, Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 Medical, Surgical, and Ear, Nose and Throat Cli Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Cl 2.30 to 5 P.M., Surgical, Medical, and Child Diseases Clinics. Operations.

WEST LONDON HOSPITAL POST-GRADUATE COLL Hammersmith, W.

MONDAY, July 23rd.—10 A.M., Dr. Dowling: Skin De ment. 11 A.M., Mr. Tyrrell Gray: Surgical W 2 P.M., Mr. Simmonds: Surgical Out-patients.

TUESDAY.—10 A.M., Medical Registrar: Medical W 2 P.M., Mr. Addison: Operations. 2 P.M., Dr. S Medical Out-patients.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical W 10 A.M., Dr. Owen: Medical Diseases of Children. 2 Dr. Scott Pinchin: Medical Out-patients.

THURSDAY.—10 A.M., Dr. Granger Stewart: Neurol Department. 2 P.M., Mr. Donald Armour: Operat 2 P.M., Mr. MacDonald: Genito-Urinary Depart

FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 Dr. Ironside: Clinical Demonstration. 2 P.M., Sinclair: Surgical Out-patients.

SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose and Operations. 10 A.M., Dr. Burnford: Bacterial Th Department. 10 A.M., Dr. Owen: Medical Diseas Children.

Daily 10 A.M., to 5 P.M., Saturdays 10 A.M., to 1 P.M., Me Surgical and Special Departments. Operations, Anæst Course, &c.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

The Lecture arranged to be given by Sir Thomas Evans on July 26th, has been indefinitely post owing to his unavoidable absence from London.

Appointments.

GOUGH, J. H. Harley, L.R.C.P. Lond., M.R.C.S., has appointed Honorary Assistant Surgeon to the Ear, Nos Throat Department of the Royal West Sussex Hos Chichester.

MURPHY, D., M.B., B.Ch. N.U.I., Medical Examiner of grants, Canadian Government.

SHARP, C. G. K., M.D., Ch.B. Leeds, School Oculist, West R

THOMPSON, J. A., M.B., Ch.B. Edin., Medical Inspector, Riding Schools.

WHITE, C. F., M.B., Ch.B., D.P.H., Medical Officer of Heal the Port of London.

Vacancies.

For further information refer to the advertisement colum

Bangor, Carnarvonshire and Anglesey Infirmary.—H.S. £

Bath, Royal United Hospital.—Asst. H.S. £100.

Birmingham, Birmingham and Midland Ear and Throat Ho 2nd H.S. At rate of £150.

Birmingham, Children's Hospital.—Res. M.O. £175. Also £250.

Birmingham University.—Walter Myers Travelling St ship. £300.

Blackburn County Borough.—Asst. Dentist. £475.

lford, Royal Eye and Ear Hospital.—Res. H.S. £120. Also H.S. £120.
bridge, Addenbrooke's Hospital.—H.P. At rate of £130.
terfield, Chesterfield and North Derbyshire Royal Hospital.—Cas. H.S. At rate of £100.
in, St. Vincent's Hospital.—Hon. Asst. Surgeon.
ina Hospital for Children, Southwark, S.E.—H.S. At rate of £120.
er, Royal Devon and Exeter Hospital.—H.S. At rate of £130.
inster, Devon Mental Hospital.—Jun. Asst. M.O. £300.
estone, Elham Union.—District M.O. Also Public Vaccinator. £55 and £14 respectively.
ings, Royal East Sussex Hospital.—Hon. Surgeon.
ford, Hertford County Hospital.—H.P. At rate of £150.
ich, East Suffolk and Ipswich Hospital.—Cas. O. £150.
rpool, Liverpool and District Hospital, &c.—H.P.
rpool University.—Alfred Jones Chair of Tropical Medicine. £1000.
rpool, Walton Institution, Rice-lane.—Res. Asst. M.O. £200.
lon Hospital Medical College, Mile End, E.—Assistantship in the Department of Physiology. £400.
dstone, Kent County Mental Hospital.—Med. Supt. £1000.
dstone, Kent County Ophthalmic and Aural Hospital.—Aural H.S. At rate of £200.
borough, Montagu Hospital.—Hon. Supervisory Radiologist.
castle-on-Tyne, Royal Victoria Infirmary.—Res. M.O. £250. Also Surgical Reg. At rate of £100.
hampton, County Borough.—Asst. M.O. £600.
rich, Norfolk and Norwich Hospital.—H.S. £120.
ngham General Hospital.—Res. Cas. O. At rate of £200.
am, County Borough.—Asst. Schools M.O. £600.
lon and County of Lancaster Royal Infirmary.—H.P. and H.S. £190 and £150 respectively.
n's Hospital for Children, Hackney-road, E.—Cas. O. At rate of £100.
mond, Surrey, Royal Hospital.—Hon. Asst. Radiologist, also Jun. H.S. £100.
erham, Rotherham Hospital.—H.P. £180.
Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. At rate of £175.
borough, Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £126.
wsbury, Royal Salop Infirmary.—H.S. At rate of £160.
ty of Apothecaries of London.—Examiner in Midwifery.
ordshire, Lechfield County Laboratory.—Bacteriologist. 10 gns. per week.
ton, Taunton and Somerset Hospital.—Sen. House M.O. £150.
lwich and District War Memorial Hospital, Shooters' Hill, S.E.—Sen. H.S., also H.P. Each at £125.
ester County and City Mental Hospital, Powick, near Worcester.—Jun. Asst. M.O. £300.

Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Linlithgow (West Lothian).

cancy for a Medical Referee under the Workmen's Compensation Act, for the district of the Clerkenwell County Court (Circuit No. 41) is announced. Applications from Physicians should reach the Private Secretary, Home Office, Whitehall, S.W.1., not later than August 9th.

rths, Marriages, and Deaths.

BIRTHS.

N.—On July 10th, at Red House, South Farnborough, the wife of Dr. G. Hunter Dunn, of a son.
FITH.—On July 13th, at Paradise House, Cambridge, the wife of A. Stanley Griffith, M.D., of a son.

MARRIAGES.

SFALL—ADAMS.—On July 7th, at the Church of St. Mary the Virgin, Ewell, Thomas Miles Moss Horsfall, M.D., to Phyllis Mary, only daughter of the late Mr. Herbert E. Adams and Mrs. Adams, of Hendford, Ewell, Surrey.

DEATHS.

.—On July 9th, at Lymington, Bt.-Colonel A. G. Kay, R.A.M.C. (retired), aged 74.
R.—On July 13th, at 70, Scarisbrick New-road, Southport, Nettie Russell Donald, wife of Dr. James R. Kerr.
BY.—On July 7th at Broad Park-avenue, Ilfracombe, Charles Henry Newby, F.R.C.S. Eng., aged 78.
LES.—On July 11th, at St. Trinian, Walpole-gardens, Strawberry-hill, peacefully in his sleep, Lieut.-Colonel Francis Patrick Staples, R.A.M.C., (retired).
TEHEAD.—On July 11th, in London, after an operation, Col. J. H. Whitehead, D.S.O., M.R.C.S., L.R.C.P., of Plains, Natal, S. Africa, aged 58.

—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NDEX TO "THE LANCET," VOL. I., 1928.

HE Index and Title-page to Vol. I., 1928, which completed with the issue of June 30th, is now in paration. A copy will be sent gratis to subscribers receipt of a post-card addressed to the Manager THE LANCET, 1, Bedford-street, Strand, W.C. 2. scribers who have not already indicated their re to receive Indexes regularly as published ild do so now.

Notes, Comments, and Abstracts.

THE NATIONAL INSTITUTE FOR THE DEAF.

THE fourth annual meeting of the National Institute for the Deaf was held at the Central Hall, Westminster, on July 17th, when the President, Lord Charnwood, was in the chair. Before the actual business of the meeting commenced, the Chairman voiced the unanimous feelings of those present by expressing the deepest sympathy with the Secretary, Mr. A. J. Story, in his recent bereavement, the sudden death of his wife.

In moving the adoption of the report of the committee, for the year ending March 31st last, Lord Charnwood emphasised the fact that an appreciable number of deaf people would be greatly benefited if facilities for a higher standard of education were provided for them, while the community would also gain. He pointed to the danger that children who were deaf might be classed among the mentally defective, owing to lack of insufficient arrangements on the part of State authorities, and some institution of national scope, he said, was needed to help the deaf after the education period. He referred to his recent effort in the House of Lords, with the support of the Duke of Montrose and the Archbishop of Canterbury, to induce the Government to set up some body to consider the whole question of the education of the deaf, and of their future employment for the good of the community. He hoped for better results in future efforts along this line, and expressed his gratitude to THE LANCET for the way in which it had supported the cause of the deaf.

Mr. Walter G. Yates, the hon. treasurer, then submitted the financial statement for the year ending March 31st, the main feature of which, he said, was that much of the money that had been obtained by special appeal had been used to make up deficiencies, and he pleaded for further donations, as the ordinary income was insufficient to meet expenses. Much propaganda work had to be done, and the results obtained by their small staff were really phenomenal.

Mr. M. Birley, Chairman of the Executive Committee, seconded the adoption of the report and of the financial statement, and the necessary motion was carried unanimously.

The Duke of Montrose said that in the name of social legislation the Government practically fed, clothed, educated, and nursed a large proportion of the people of the country. Something like one person in 30, he understood, was in receipt of State alimony of some kind in the name of social welfare, and he thought the time had arrived when something more should be done for the deaf. The only department of the Government which seemed to be concerned with the deaf was the Board of Education, and they were only interested in the education of children up to 16, or, in some cases, 18 years. It was 40 years since any Government Department had made an inquiry into the position of the deaf, and it was time that there should be an examination as to their welfare. Referring to the debate on Lord Charnwood's motion in the House of Lords for a Departmental inquiry, he stigmatised the proceedings as discreditable to the House, while he advocated the formation of vocational centres for the deaf and the encouragement of craft-work in order that as many deaf subjects as possible—and he thought the number would be very large—might become self-supporting. He moved:—

"That having regard to the grave social and industrial hardships caused by deafness in the lives of large numbers of adolescent and adult persons who were born deaf or have become so, and to the fact that no official inquiry into the results (in the terms of improved social and industrial well-being) of large public expenditures in their education has ever been held, this meeting is strongly of opinion that the time has arrived when a complete investigation into the conditions and needs of these deaf and dumb and deafened persons should be made.

"And, further, that this meeting urgently calls upon the Government to make such an investigation by means of a Departmental Committee, or otherwise, at an early date."

Colonel F. E. Fremantle, M.P., who seconded the motion, said that something like one-third of the adult population of the country had some difficulty of hearing, so that, apart from the cases with which the National Institute dealt, there was a huge number of people who should be personally sympathetic, and consequently be a potential source of help to the Institute. He quoted statistics which suggested the enormous loss to the country in personnel which defects of hearing caused, and thought that from the economical point of view the country might be losing as much as two million pounds a year through neglecting to employ the deaf suitably. He cited also figures contained in a contribution to THE LANCET by Squadron-Leader David Ranken dealing with the physical examination of airmen, and showing that of the total percentage of rejected recruits from the Air Service for all reasons it might be estimated that aural

disease affected 2·8 per cent. of that part of the population likely to present themselves for enrolment. From figures supplied from one particular London school for deaf boys between the years 1902 and 1928, and dealing with 737 boys who had left, he said that 89 per cent. of these were in employment and following a trade which they had learned at school, showing the high degree of efficiency which could follow training. It was obvious that the country ought to go ahead in that direction, and he was glad that the Institute was attempting to take the matter up on a national scale, and obtain the hearing of the Government.

Sir Squire Sprigge moved :—

"That the best thanks of the meeting be given to the President, the Executive Committee, the hon. Treasurer, hon. Solicitors, hon. Auditors, and to Mr. C. M. R. Balbi, A.M.I.E.E., hon. consulting electrical expert, for their services during the year, and that all these gentlemen be requested to act in their several capacities during the ensuing year."

The motion was carried unanimously and the meeting terminated with a cordial vote of thanks to the chairman and speakers.

FACTORY GIRLS' COUNTRY HOLIDAY FUND.

To the Editor of THE LANCET.

SIR,—Will you once again give us the opportunity of drawing the attention of your readers to this Fund, which may well claim to render good service to our poorer sisters, and so to the whole community. The change wrought in these pale Londoners in a few days is almost incredible, save to the eye-witness. Good food and plenty of it, rest on the beach or in the fresh country fields, and above all, freedom from care—knowing their holiday is paid for before they go—work wonders. There are now hundreds of girls hoping to be sent away during the next few weeks. Fresh applications come in daily, but we have not enough funds to send half the number at present. Many of the applicants have been saving out of their earnings week by week since the beginning of the year, towards their share of the cost of their holiday. Are they to be denied this pittance of a holiday, looked upon by most as a bare necessity? Are they, who for at least 50 weeks of the year have to go to their long and monotonous day's work in all weathers, to be denied health-giving air and surroundings during the other few days? Could your generous readers see, but for a moment, that long procession of hard-working and, alas! often worn, and pale girls coming to pay their savings week by week, for months before their holiday, they could surely not deny them the balance which would make it a certainty. This Fund helps chiefly the poorest class of factory workers, most of them are the main support, too, of their families. Subscriptions and donations will be thankfully received and acknowledged by the hon. treasurer, Mrs. Slater, or Miss Canney, 75, Lamb's Conduit-street, London, W.C. 1.

We are, Sir, yours faithfully,

(Signed) ALBERTA SANDWICH, A. F. LONDON,
MARY SCHARLIEB, J. F. GREEN,
LILIAN BRAITHWAITE, Chairman.

July 16th, 1928.

HEALTH INSTRUCTION FOR MISSIONARIES.

THE fourth edition of a pamphlet entitled "Health Instructions for Missionaries in the Tropics," has been issued by the Association of Medical Officers of Missionary Societies (1, Farnley-road, London, E. 4), price 4*d*. Various additions, including illustrations of some of the disease-carrying insects, have been made since the last edition was published in 1922 and the whole text has been revised. The booklet is intended for study before going abroad, and for reference when in the tropics.

THE ALMONER'S WORK AT AN EYE HOSPITAL.

A SHORT report by the Lady Almoner of Moorfields[1] gives a vivid picture of the routine work in her department. Children with phlyctenular keratitis, blepharitis, or interstitial keratitis who fail to respond to the surgeon's treatment are often found to be living in unhygienic conditions. A prolonged convalescence in a suitable institution often does far more to help them than continued attendance at the hospital. A child may be sent to Mayfield Ophthalmic Convalescent Home where there is skilled ophthalmic nursing, or to Swanley Ophthalmia Schools; in other cases the visits of a district nurse at the home may be effective. Extra food may be required, when the coöperation of a charitable society, such as the Invalid Children's Aid Association, may be applied for. Children suffering from interstitial kerat may have to be transferred for treatment at one of V.D. centres. For cases of progressive myopia, the surg may recommend either a myope school or "easy tre ment" at school. Without the social service wor there would be nobody to see that this recommendation carried out. Another class of case that needs the help of social worker is that of the blind or partially blind, whom surgical treatment can do no more. Even infa under 5 may benefit by a sojourn at a "sunshine hom whence they return not quite so helpless as before. Th are schools for the blind for older children, workshops adults, and pensions for those over 50, and in all th cases the almoner's business is to put the patient in to with the appropriate voluntary association or Governm department. Her work is an essential supplement to tha the surgeon.

[1] Royal London Ophthalmic Hospital (Moorfields Eye Hospital), Report of the Samaritan Fund and the Work done in the Social Service Department for the Year, 1927.

PSYCHIATRY IN INDIA.

THE European Mental Hospital at Ranchi has issue report on its progress from 1924–1926. The number patients admitted and discharged during the triennium 199 and 124 respectively, and the total mortality was 16, 9, and 37 voluntary boarders were received in each the three years. The admission of three mental defecti brought up the question of State care of these children, the Government decided that it could not yet cope with vast a problem. The medical superintendent, Lieut.-Col O. A. R. Berkeley-Hill, is doing his best to arrange a pio institution to take 20 children. The value of occupatio therapy for mentally disordered patients is recognised Ranchi, and special buildings are to be provided for purpose. A games and sports department is actively work, and a swimming and boating lake has been constru by damming a valley in the neighbourhood. A go patient has discovered and laid out a nine-hole cou After-care of discharged patients is a difficult problem India, but Toc H and the League of Women Workers h rendered invaluable service of this kind in Calcutta. Inv gations into the production of aseptic meningitis by injec of horse serum have been carried out with the aid of dhobi's pony, and will be reported on next year.

We wish Lieut.-Colonel Berkeley-Hill every succes his exacting task.

"MANSON HOUSE."

THE suggestion that Manson House should be the n of the new headquarters of the Royal Society of Trop Medicine and Hygiene has already given rise to confus as the word may be mis-heard as "mansion house," Col Clayton Lane's plea that the building should be ca "Patrick Manson House" is supported by the fact tha mis-printed "mansion" as "manson" in his last le (THE LANCET, July 14th, p. 95), thus committing the possible errors in consecutive issues of this journal. W purists may regard their pronunciation of this inve shibboleth as beyond criticism, it can evidently c inconvenience even to those whose intentions are excell

CHILDREN AND THE SEASIDE HOLIDAY.

THE problem of the children is always an anxious on parents, but never is this more so than during the m of August, when the schools are closed and everyor holidaying. At Hastings the corporation has engag staff-sergeant whose duty during August will be to ar the children on the sands with organised games, and at same time to give them instruction in physical drill. value of this excellent scheme is increased by the prov of a tent which will play the part of a creche.

CONFECTIONERY.

THE Chocolate and Confectionery Exhibition, hel Olympia last week, was not without medical inte Wholesome chocolates and pure boiled sweets can be useful, as well as popular, prescriptions at the proper while toffees and mints play their part respectively i treatment of pharyngeal cough and minor digestive diso Chocolate is a very valuable vehicle for milk, and the of Cadbury's "Dairy Milk" is manufactured in the su when the milk-supply is ample and irradiated. For who like a coffee flavour, Terry's new "Café au lait" c late can be recommended. De Villars specialise in chocolate flavoured with all sorts of surprising thi orange, raspberry, and currant, for instance. Fox's "G Mints" and barley sugar are well known, but not every knows that this firm also markets a eucalyptus and me sweet for winter colds and throats. Van Houten's is a household word; their bitter chocolate is an exc food-medium for those who do not like a sweetmeat. wholesome assortments, the Dutch firms, such as Diost Rademaker, should not be forgotten. This was the exhibition organised by the chocolate makers alone.

An Address

ON

SOME REACTIONS AND A RETROSPECT

Delivered at the Annual Meeting of the British Medical Association at Cardiff on Tuesday, July 24th,

BY SIR EWEN MACLEAN, M.D., F.R.S. EDIN., F.R.C.P. LOND., HON. F.A.C.S.,

PRESIDENT OF THE ASSOCIATION; PROFESSOR OF OBSTETRICS AND GYNÆCOLOGY, WELSH NATIONAL SCHOOL OF MEDICINE.

[AFTER reviewing the public work of the Association since it last assembled in Cardiff 43 years ago, the lecturer continued:—]

ANCIENT CYMRIC MEDICINE.

Casting back to more distant times, the exhibit which, by the courtesy of the authorities, has been set up in the Library of the National Museum shows, I think, that "Antient Cymric" medicine affords a most attractive field for study and research, and I am indebted to my friend Dr. Roland Williams for many interesting observations and gleanings in this connexion.

Handed down from very remote times, a glimmering of medical science would seem to have existed in Pre-Celtic and Celtic Britain. It is difficult to conceive, for instance, that the new Stone Age and the Bronze Age, rich as they were in the pioneer achievements of civilisation, should have been lacking entirely in some form of indigenous medical lore. Possibly, too, those very early traders from the older Mediterranean civilisations who came to seek tin from Cornwall left behind them something of the healing traditions of other lands. At any rate, however such knowledge may have accrued, there are some grounds for crediting the Druids with perhaps a greater preoccupation with medicine than was usual in a primitive priestcraft. The Greek geographer Strabo (born about 60 B.C.) has left it on record that the "soothsayers are sacrificers and physiologists; the Druids, in addition to physiology, practise ethic philosophy." Pliny gave a brief account of a Druidic *Materia Medica* in which the mistletoe or "All-Heal" was held in highest esteem. Presumably, too, the British Druids were similar in type to the Druids of Gaul, to whose advanced "knowledge of the Laws of Nature" Cicero referred. It is interesting to note that, as preventives to ill health, the Druids prescribed *cheerfulness, temperance, exercise, and early rising*, qualities and practices which—shall we say?—have remained characteristics of the Cymry to the present day. Albeit, another of the Druidical maxims, asserting that "Money lent in this world will be repaid in the next," would not, I fear, in practice to-day, rank as a gilt-edged security.

After the Druids came the Romans. Soldiers, engineers, administrators as they were in the main, we do not know what legacy they left behind them towards the building up of a native medical tradition in Wales, but it is legitimate to surmise that at least some elements of the lore of Hippocrates and the great Greek medical tradition may have made its way into Britain with the legions, and, once implanted there, may have lingered, as the *language* of the legionaries lingered after their departure, in Cornwall, in Cumberland, and in Wales. It is a significant fact that the modern Welsh word for a physician, the word *meddyg*, goes back directly to Roman times, being derived from the Latin *medicus*, and occurring first in its Welsh form in the old Cornish vocabularies.

After Rome, the welter of the Dark Ages—a period dark to the historian everywhere in Europe, but darkened still more in Wales owing to the distrust by which many of the manuscripts relating to the period are subject. Not until the beginning of the tenth century and the codification of Welsh Tribal Law about that time do we come upon reliable information regarding the profession of medicine.

A thousand years ago King Hywel the Good caused the laws of Wales to be codified, and it is in these codes that we get the first authentic glimpses of our profession and the manner of men who practised it in tenth-century Wales. This monarch had a court physician who was given place and prestige in his presence, had a grant of free land and a horse, and received his linen clothing from the Queen and his woollen clothing from the King. His seat in the hall within the palace was at the base of a pillar near to the King, and his lodging was with the chief of the household. It was his duty to administer medicine without charge to all within the palace, and to the chief of the household. It would appear that he was a whole-time officer, with intervals when, on the basis of a moderate tariff, he was allowed to enjoy the stimulating freedom of private practice. He had to accompany the armies, but ordinarily he was never to leave the palace without the King's permission, when he was free to take any road or route with the messenger of the sick. In those days it was lawful for anyone to take another's horse to procure a medical man for a person in danger, without being required to make amends. The same principle applied to-day in respect to motor-cars might lead to serious misunderstandings.

The chief interests of these early codes, from a medical point of view, lies in the way they assessed legal damages for injuries and laid down standard fees for treatment. The thumbnail, for instance, was worth 30 pence. One front tooth was equal to a finger; one molar tooth to a thumb.

MEDIÆVAL TRADITIONS.

The old laws are interesting as showing us something of the state of the Welsh *meddyg* under the Welsh tribal system in the tenth century. The eleventh century brought with it great changes in Welsh history. A great new formative influence came then into the life of Wales—that was the Norman. The Norman affected profoundly the whole course of Welsh life and politics. Under the walls of his castles there grew up townships, markets, forts. Once more, as in the days of the early wandering Celtic missionaries, Wales came into touch with the rest of Europe and the world. For not in Wales and England only, but in Ireland, in France, in Spain, in Sicily, in Palestine even, on the threshold of immemorial East—there too were the castles of the Norman. Pilgrim and Crusader, merchant, monk and friar, errant knight and troubadour, all whose activities helped to render knowledge fluid and international throughout the Holy Roman Empire, must have helped towards the building up of a native medical tradition in mediæval Wales, a tradition which has left behind as its monument a fourteenth century manuscript, the older of the two manuscripts known as the "Books of the Physicians of the Myddfai."

It was but natural that the tradition of the physicians of the Myddfai in mediæval Wales should trace its origin back to the fountain head of a legend.

In the fastnesses of the wild Fan Mountains of Carmarthenshire there is hidden away a small lake known as Llyn-y-Fan Fash. Long ago, so the legend runs, a shepherd boy named Gwyn was tending his flock on the shore of the lake when a most beautiful maiden emerged from the mirrored surface of the water. After many complications, which are so essential to a fairy tale, Gwyn and the maiden of the lake became man and wife. Three sons were born to them, but after a time the maiden disappeared again into the depths of the lake, taking with her her faery dowry of cattle and chattels. At a later day, however, she reappeared to her three sons, who kept vigil for her on the shore. The eldest son, Rhiwallon, she led aside to Pant-y-Meddygon (the Physicians' Hollow); there she revealed to him the properties of the medicinal plants and herbs which grew around them,

and called upon him to dedicate himself to the art of healing. This Rhiwallon did, so that he became the physician to Rhys Grug, Lord of Llandovery and Dynevor. Tradition claims, too, that the descendants of Rhiwallon practised their art at Myddfai in unbroken lineage until the end of the eighteenth century.

Such, in brief, is the story of the physicians of Myddfai.

Interesting though these earlier figures may be, however, it is only after the Renaissance had rejuvenated Wales that we come upon the beginnings of a really brood-culture among Welsh physicians. Although not one of the outstanding physicians of Wales in Tudor and early Jacobean times had any claim to be compared to a Sydenham or a Harvey, they were yet figures commanding interest and respect in other ways. Educated, most of them that we know of, at the older English universities, their medical writings and their medical beliefs were, for their day and generation, reasonable and scientific. One striking characteristic which many of them had in common was the great breadth of their culture and their scholarly achievements in other arts besides medicine. Thus Phaer of Pilgeiran was one of the first great Elizabethan translators of the classics, while to Robert Recorde of Tenby we owe the introduction of the study of algebra into this country.

Time does not permit to follow the fortunes of the Welsh *meddyg* through the seventeenth and eighteenth centuries. Something of their ubiquity and prominence may be gathered from the fact that the two surgeons on board Captain Cook's ship the *Resolution* in 1777 were Welshmen—Robert Davies of Wyddgrug, and David Samuel of Denbigh. Samuel later became surgeon of the *Discovery*, and he may have suggested to his captain some of the latter's very enlightened ideas regarding the relationship of scurvy to diet. At any rate, Samuel was a scientifically minded man, as shown by his treatise on the introduction of certain diseases among the South Sea Islanders. "He was," so wrote one of his contemporaries, "extremely irritable, but one of those hearty fellows we expect a sailor to have been."

But however true it may be that the past, even the distant past, is ever with us and must tincture our every thought and deed, the blend of the present and the immediate future is the main incentive to individual and corporate action.

Health Organisation in Recent Times.

The population of the world to-day is many times greater than it was a thousand years ago, and over the average of years Mother Earth shows no signs of failing to respond to the food and other requirements of her increased family of humans. Correspondingly, however, much more work has to be done by these humans in order to extract and prepare these requirements. Effective work involves a sufficient measure of health, and hence, perhaps, one factor at least of the instinctively higher regard for the health of the individual and of the community which is so marked a social feature of the day.

The demand is insistent, and from the nature of the case the supply can never wholly meet it. But quite wonderful achievements have been registered by organisation and scientific discovery. At the same time those who know must know how much more remains to be done.

A sign of the time, that enactment of outstanding importance, the National Health Insurance Act, 1911, which provides domiciliary medical attendance for, say, 16 million of the 45 million of the population, has profoundly modified and to a significant extent refocused the conditions of the great bulk of medical practice in this country.

Piloted with great ability and energy through a half-reluctant House of Commons by Mr. Lloyd George, the then Chancellor of the Exchequer, menaced by vested and otherwise disturbed interests, this colossal measure came into operation in the early days of January, 1913. The unavoidably complex machinery of so far-reaching an Act was but as yet in the stage of graduating through the inevitable jolts and jars when the cataclysm of the great war and the disabilities of demobilisation intervened as a further strain on administration.

It says much for the administrative staff and even more for the 15,000 medical practitioners accepting service under the Act that, as set forth in the Memorandum of Evidence submitted by the British Medical Association to the Royal Commission on National Health Insurance, both the Representative Body of the Association and the Conference of Representatives of Local Medical and Panel Committees agreed "that the measure of success which had attended the experiment of providing medical benefit under the National Health Insurance Acts system has been sufficient to justify the profession in uniting to ensure the continuance and improvement of an insurance system."

It is demonstrable that insured persons under the Act, taken as a whole, are provided with a better grade of medical service than were their equivalent before its inception. But of the making of regulations there is no end, and the officials concerned, and certainly the busy practitioner, may well be forgiven if, on occasion, a lapse of memory leads to executive error. It would be a real boon to the insurance practitioners, to the officials, and to the insured persons, and would prevent many mistakes and misunderstandings, if someone—it would admittedly require little short of a genius—would intelligibly collate the multitude of regulations.

Under the Act as it stands much more could have been done, and should be done, in the matter of wise propaganda directed to the means of preserving health and of preventing disease; but, taking the Act in general, with its many inherent administrative difficulties, it can be said that the major provisions are being sympathetically and effectively implemented. But the degree of success so far attained in itself calls for further and fuller developments, which in due course should be equally available for all insured persons regardless of their membership of any particular society.

Such further provisions should include complete consultant and specialist advice and treatment, and under conditions, nursing and massage. Various salient advances by some of the approved societies have already been made into the region of these developments, notably in the form of dental, ophthalmic, or institutional extra benefits, and the experience and results accruing will, doubtless, ultimately encourage an advancement of the line, as indicated in recent enactments by Parliament.

In such logical and, indeed, inevitable development of the health insurance scheme, stage by stage being added after full consideration of the reasonable interests of those concerned, I for one fail to see the risk of any sudden ultimate transmutation to a whole-time State medical service, with its connoted and handicapping officialism and sacrifice of personal freedom.

[At this point the lecturer briefly surveyed the advances of medicine and surgery since the Association last assembled in Cardiff. On the crest of the wave in recent years, he said, ride prominently the bacteriological and biochemical discoveries, the latter even overshadowing the former, as witness the new science of the endocrines, the chemistry of body fluids, the functions of organs as expressed in their influence on the composition of the blood—for example, liver, spleen, and, lastly, the vitamins. Such a recital, he remarked, provokes the reflection that if one of the old alchemists came to life in our midst to-day, after the manner of Rip van Winkle, in all else but technique and terminology he might find himself very much at home. The lecturer then went on to deal with certain developments in present-day practice.]

MATERNAL MORTALITY.

It has been urged, and with truth, that one of the most vitally important branches of medical practice —obstetrics—has not shared in due proportion the benefits accruing from the Listerian epoch with regard to the incidence of infection. Many persons, and many interested bodies, including the Ministry of Health and our Association, have been, in their several spheres, devoting time and earnest attention to the problem, and it is of the first importance that Her Majesty the Queen has personally associated herself with the movement to adequately investigate the governing causes and to endeavour to reduce the maternal mortality and morbidity rates.

No further incentive to this end need be furnished than the oft-quoted facts that more than 3000 mothers lose their lives every year in England and Wales; that in more than half of this number death is due to septic infection which, it is claimed, is, or should be, a preventable condition. Preventable, yes, given certain conditions. It is well known that under properly conducted institutional conditions mortal septic infection arising de novo is reducible to vanishing point. In these establishments the observance of every detail and circumstance of technique designed to secure asepsis can be carried out, and a confidence generated akin to that with which surgery in general is now undertaken.

Inasmuch as, in a country like ours, all cases, or any very considerable proportion of them, cannot be institutionally provided for—the total in England and Wales would require something like 30,000 beds—the problem would appear to be capable of solution if it were possible to reproduce in the homes of the people the essential factors of this provedly effective hospital treatment. This deduction loses little of its force even if it be urged, as with truth it may, that on the one hand there are some rapidly fatal cases of infection in which every known precaution has been taken, and, on the other hand, that some difficult and complicated cases, in the circumstances of which practically no precautions can be observed, may make a smooth recovery. Such cases are the exception and not the rule.

To reproduce, however, in the average home that veritable Temple of Asepsis the operating theatre, with its ministering priests and priestesses, is, of course, impossible. But to be effective the ritual need not be complicated, and the association of antenatal care and, if necessary, treatment; the adequate nursing; the unhurried waiting upon events in suitable cases; and the availability of skilled experience of all kinds if and when required, are equally indispensable elements in the right kind of institutional treatment. There are thousands of general practitioners who, in letter and in spirit and wherever possible, transmute the largest common denominator of these hospital advantages into their practices, and their results attest the fact.

Every practitioner, however, and especially in certain districts, must not rarely encounter such conditions of poverty, ill-housing, previous unskilled interference, and other handicapping circumstances, as render it impossible to practise asepsis, and where accordingly the pathways to infection are hopelessly unguarded. It is gratifying to note that several local authorities are doing much to meet the circumstances of many who cannot afford even a very inexpensive equipment—the maternity benefit notwithstanding—and that the sequel is encouraging.

It is much to be hoped that at no distant date the recommendations submitted by the Association to the Royal Commission on the Insurance Act in regard to this supremely important branch of medical practice will be materialised.

Meanwhile the tendency exhibited in certain quarters to make the general practitioner the scapegoat for the sins of many is to be deprecated. To begin with, he cannot be sent into the wilderness. In his hands, either in the original charge or as a consultant of first instance, must lie the application of the standard obstetrical practice of the day for the great bulk of domiciliary cases. He needs, not blame, but support in the form of the provision of facilities in suitable cases to cope with this most anxious, time-absorbing, underpaid factor of his work. As it is, his devoted response to its calls in most difficult circumstances is worthy of all praise.

There are many aspects of this international problem which are baffling, and one cannot but earnestly hope that the intensified research which is now being directed not only into its bacteriology but also into the question as to the factors which constitute and the conditions which vary resistance to infection, may produce helpful light and leading.

INTERNATIONAL COÖPERATION.

This and many other important topics of international concern are engaging the close attention of the appropriate departments of our annual meeting. Indeed, we are, by the presence with us on this occasion of so many distinguished representatives of other countries and other climes—whom we are delighted to have the privilege of greeting—strikingly reminded of the cosmopolitan character of the science and art of medicine. Orthodox medicine knows no protection barriers and claims no patent rights. The international pooling of ideas, of discoveries, and of experiences is essential to the recognition of even a datum line of the advances in the various departments.

There is an impression abroad—and it is not, perhaps, ill-founded—that in the British Isles we do not sufficiently organise and utilise the wealth of clinical material at our disposal for post-graduate demonstration in the interests of our home profession and of visitors from other countries. Good work has been and is being done in the various metropolitan centres, but these do not claim a monopoly of skill and clinical facilities. I have long felt that, with its wonderfully ramified machinery to link up the provinces and the capital, the rural areas and the towns, no body is so well adapted as our Association to organise a post-graduate system embracing existing institutions and developing many new centres, on a scale worthy of this country.

I am not without hope that there may be forthcoming a national, nay, an international, benefactor willing to entrust the Association, as a voluntary body, with the considerable sum of money necessary to establish and conduct such a system. I am convinced that thus we would not only raise the standard of efficiency, and therefore of health, in this land, but colleagues from overseas and other lands would find it more than ever worth their while to spend some time with us, to our mutual benefit. The advantages would not be limited to our professional spheres, but would surely develop in wider measure social and ethical results of far-reaching significance.

No branch of the League of Nations exerts a wider general influence than the Health Organisation, the head of which, Dr. Rajchman, we are so glad to have with us. That influence is not accidental. It is essential. For may we not, in all humility, venture to claim that no other profession or calling can offer a basis of union so broadly appealing to what is common to mankind as the objective of preventing, alleviating, and curing the diseases of humanity?

A GOVERNMENT HOSPITAL IN LIBERIA.—Mr. King, the President of Liberia, the Negro Republic on the West African coast between Sierra Leone and the French colony on the Ivory Coast, recently opened a Government hospital at Mourovia, the capital. It stands high, is built of stone and concrete, and encircled by wide-covered verandahs. There are 200 beds in small wards and single and double rooms; there are maternity and contagious diseases wards and a pavilion for patients awaiting admission. The hospital is open to patients of any race or colour, and the medical staff is composed of two Europeans and a Liberian, all of whom have been trained in Europe and the United States, and are specialists in tropical diseases. The nurses have been trained in America.

PUBLIC ACTION IN REGARD TO CANCER.*

By Sir GEORGE S. BUCHANAN, C.B., M.D., F.R.C.P. Lond.,

SENIOR MEDICAL OFFICER, MINISTRY OF HEALTH, AND PRESIDENT OF THE CANCER COMMISSION OF THE HEALTH COMMITTEE OF THE LEAGUE OF NATIONS.

We are invited to-day to consider "public action" designed to reduce, in our time, the suffering produced by an ever-threatening disease, to cure it when it can be cured, and, last but not least, to prevent it where knowledge and means are at hand for its prevention. And "public action" for this purpose may be taken to cover every form of collective public effort, whether taken voluntarily, by groups of citizens acting independently of any State medical system, or organised by central or local government authorities out of rates and taxes.

A review of public action, thus conceived, if it were to be just and to take account of the different lines of effort followed in the many countries represented at this Conference, would be a task which is, historically and administratively, far outside my own competence. My best course, I think, will be merely to say a few words as regards this country, and to point to a few of the more recent illustrations which it affords of the benefit which collective action can secure. I will then invite those who come from other lands and work under other conditions of medical practice and public health administration to give us their experience of their own lines of work and help us with support or guidance.

Increasing Recorded Mortality-rate.

For England and Wales, then—from my official limitations I find it easier to deal with this part of the United Kingdom, leaving Scotland and Northern Ireland to their own exponents—I may start by referring to the way in which, in recent years, attention has been directed to the steadily increasing recorded mortality-rate from cancer—a feature which differentiates it from practically all other causes of mortality. It is unnecessary to assume that this recorded increase denotes a corresponding increase in the real incidence of the disease, since it is well known that other factors, such as average increase in longevity, improvement in diagnosis, and improvement in death certification, must all be reflected in the mounting annual figures. Nor will it be forgotten that this over-all increase comprises increases at certain sites of the disease, decreases at others.

But yet consider the following death-rates per million living in England and Wales during the period 1847–1927 :—

Certified Deaths per Million from Cancer in England and Wales, 1847–1927.

1847–50 ..	274	1886–90 ..	632	1921 ..	1215
1851–55 ..	306	1891–95 ..	712	1922 ..	1229
1856–60 ..	327	1896–1900 ..	800	1923 ..	1267
1861–65 ..	367	1901–05 ..	867	1924 ..	1297
1866–70 ..	403	1906–10 ..	939	1925 ..	1336
1871–75 ..	445	1911–15* ..	1055	1926 ..	1362
1876–80 ..	494	1916–20* ..	1182	1927 ..	1376
1881–85 ..	548	1921–25 ..	1269		

* The mortality for the years 1915–20 relates to civilians only.

Before we write off all this rise as a product of more accurate diagnosis and certification of causes of death, or as due to the steady prolongation of lives into the ages most prone to die of cancer, we must remember the causes which all through this long period have been doing their best, and potently, to produce a fall—vastly improved surgery, anæsthetics, asepsis, new pathology, better medical education, research, and devoted medical work at every stage. Cancer patients have shared with others the benefits of the great developments in the voluntary hospitals, in the poor-law medical service, and in other methods of caring for the sick, which during this time have changed almost beyond recognition. Nevertheless, if all these things have stemmed the tide, the flow continues. It is small wonder, therefore, that in these later and post-war years, when so much attention is being given to the prevention of disease and the reduction of sickness, a desire has arisen in many quarters to see what may be called normal medical effort strengthened by special collective action.

Special Collective Action.

Until lately only a few examples of such special collective action came readily to mind, although they were important ones. There was in particular the foundation of three special cancer hospitals. The primary object of these hospitals, the Cancer Charity of the Middlesex Hospital, founded 1792 (now the Middlesex Cancer Hospital), the Cancer Hospital, established 1851, and the Christie Hospital, Manchester, established 1892, was doubtless that of providing institutional treatment for incurable cases, but each of them has widened its scope, and now treats patients in all stages of the disease, and possesses a modern research department. Then there was the Imperial Cancer Research Laboratory which began with the Cancer Research Fund, now the Imperial Cancer Research Fund, established through private munificence in London in 1902 (under the patronage of H.M. the King) and placed under the direction of the Royal Colleges of Physicians and Surgeons, whose work is known to you all. I should mention also the Radium Institutes in London (1911) and Manchester (1915) which, though also undertaking the treatment of other conditions, are mainly concerned with neoplasia. All the special institutions just mentioned owe their foundation, and in some cases their daily maintenance, to private generosity; they are in no sense State or municipal organisations.

Among the studies of cancer made for the State during the period are, of course, the well-known reports from the Registrar-General's Department, in which the mortality from cancer as a whole and its specified varieties, as judged from certification of causes of death, has been regularly collected and reviewed annually and decennially, and all the work directly or indirectly bearing on cancer which has depended on the Medical Research Council, and is equally well known to you.

Among instances of State intervention for the control of cancer was the action taken in November 1919, when by an Order of the Secretary of State for Home Affairs (under Section 73 of the Factory and Workshops Act, 1901), epitheliomatous ulceration due to tar, pitch, bitumen, mineral oil, or any compound, product, or residue of these substances contracted in a factory or workshop was scheduled as a disease the notification of which was obligatory on medical practitioners. In one sense the action was merely part of the normal procedure adopted in the prevention of a disease liable to be caused by occupation, but its value, for a wider purpose, should not be ignored. Lessons learnt in the investigation of cancer caused by occupational risks may have an important bearing upon the elucidation of the nature of cancer in general.

Another step of importance was the handing over to the Medical Research Council, after the war, of a considerable stock of radium in the possession of the Government. This stock has been distributed to selected hospitals and used largely for treatment of cancer, always under the condition that its use is part of research and that the results should be reported to and considered by the Council, with the aid of its Radiology Committee.

Four Recent Directions of Activity.

I come now to certain forms of public action which are of more recent date.

(1) About the end of 1922 the Minister of Health decided to appoint a Departmental Committee "to consider available information with regard to the

* Opening a discussion on the subject at the International Cancer Conference on July 20th.

causation, prevalence, and treatment of cancer, and to advise as to the best method of utilising the resources of the Ministry for the study and investigations of these problems." The chairman of the committee is the Chief Medical Officer of the Ministry, and its members include members of the medical profession with expert knowlegde of the disease in its various aspects — experimental, pathological, surgical, medical, statistical, &c.

(2) Following some interesting discussions on the comparative incidence of cancer mortality at the Office International d'Hygiène Publique (October, 1922), the League of Nations Health Committee decided, in 1923, to set up a Cancer Commission, the work of which, so far as the participation of England and Wales is concerned, has since been carried out in close association with the Departmental Committee.

(3) In 1923, also, the British Empire Cancer Campaign was started—a voluntary organisation with its centre in London, the object of which is "to correlate and extend all existing efforts in fighting cancer." The direction of the campaign is in the hands of a body of distinguished men, both lay and medical, and its principal activity, besides the coördinating work, is that of collection and disbursement of funds for promoting research into the causes and cure of cancer.

(4) During the last four or five years some of the larger municipalities have given considerable attention to the subject of cancer, especially those cities which are centres of medical education or well supplied with hospitals. The Departmental Committee above referred to has secured some coördination of this local work by forming a subcommittee, consisting of medical officers of health of the areas in question, which meets from time to time at the Ministry of Health.

(1) Departmental Committee of the Ministry of Health.

I hope to be forgiven for dwelling at disproportionate length on the work done at the Ministry of Health under the guidance of the Departmental Committee, merely because it happens to be well known to me. The standing problem which we then have before us is whether available skill and existing knowledge are, at the present time and with present weapons, being given all the chance to reduce mortality or relieve suffering that they ought to have. For example, does the obstacle lie in the absence of sufficient public propaganda in favour of early diagnosis and treatment, or in the faults of misdirected propaganda, badly conceived and based on half truths? If so, what is good, safe, and effective propaganda? Are cancer patients now presenting themselves for advice, but failing to get it? Is there doubt whether surgery or radiology do produce the results so often claimed for them, and how far is that doubt justified by the facts? Is the main difficulty one of getting sufficient facilities for early surgical or radiological treatment; are there, in fact, long waiting-lists of patients; and what should be done about it? Do we know enough of the conditions of incurable and inoperable cases, and are they alleviated as much as they could be? Finally, is there anything useful to be said as regards the way in which conditions which lead to cancer can be avoided? What do we really know about such conditions; are they as a practical matter avoidable; and if so, in what way?

Now the information needed to resolve these questions is not of the type which can usually be obtained by cancer research workers, whether in laboratories or the wards of hospitals. It demands the laborious collection and scientific statistical analysis of massed data regarding the conditions associated with the onset of cancer, the effects of various methods of treatment, and many other investigations for which it is almost essential that the resources of the central health authority should be added to those of other investigators. Work in these directions, moreover, requires that national experience as a whole should be checked and compared at different stages with that of particular local areas on the one hand and with that of different countries on the other. The Departmental Committee has endeavoured to secure both by the liaison systems I have mentioned, through its Medical Officer of Health Subcommittee, and through its representation on the League of Nations Cancer Commission respectively.

Data for Cancer of the Breast and Surgical Results.

The work alluded to has so far been chiefly concerned with the disease at the three sites—breast, uterus, and rectum. In the case of cancer of the breast a statistical analysis undertaken of published literature and of the clinical records of hospitals established on a broad basis the fact that operative treatment (by which is to be understood the complete operation) results in the survival for long periods—ten years—of as many as 80–90 per cent. of patients if they submit to operation at an early stage of the disease—i.e., before it has spread beyond the confines of the breast. Once the disease has spread beyond the breast the chance of prolonged survival diminishes rapidly. In both categories the analysis made did more than confirm an opinion long held by surgeons; it brought the facts into terms capable of precise expression and established a firm basis on which the medical profession and the public are safe in acting. There is, moreover, no escape from the practical conclusion; without any extension or alteration of existing facilities for diagnosis or treatment a very large number of the lives now lost from this cause could be saved if a larger proportion of patients were submitted to operation in an early stage of the disease. Using data which permitted lessons to be drawn from average figures, it was found that an average interval of some nine months is allowed to elapse between the patient noticing the abnormal condition and seeking treatment. While it is not possible to state an average period necessary for spread of the disease to the axillary glands, in a large proportion of patients these glands are affected within six or seven months of the onset, as observed by the patient.

It is not too much to say that this demonstration that early operation affects such an overwhelming proportion of cures (for absence of recurrence after ten years can usually be regarded as a cure) surprised many surgeons. The figures seemed too good as an index of the average results obtained by surgeons in general. But the conclusions of the Committee have been strengthened by a later analysis of a still larger sample of English hospital cases in a report not yet published. In this later analysis the results after operation were also correlated with the microscopical characters of the growth. Though there was evidence that the glandular and colloid varieties had a higher survival rate than the spheroidal-celled growths there was no evidence in the latter that the more cellular growths had a worse prognosis. It was also found, contrary to the general impression, that risks of recurrence are not appreciably greater in younger than in older patients. In all cases the most important factor in prolonged survival is the stage of the disease at which appropriate treatment is applied. And in all cases the hopeful method, at present, of reducing mortality is to find some means of inducing women with an abnormal condition of the breast to seek treatment as soon as any abnormality manifests itself.

The analysis has also enabled the factors which have been thought to be of importance as predisposing causes to be sorted out and their influence statistically assessed—e.g., infertility, injury, chronic mastitis, and transient non-suppurative mastitis—matters in which it has now proved that the experience of certain foreign countries is closely parallel to that of England.

"Natural Duration."

The Committee at an early stage found that they needed another piece of knowledge—namely, the average interval between the onset of the disease, as observed by the patient, and the fatal termination in those cases where for one reason or another no attempt at radical treatment had been made—i.e.,

an average figure representing the so-called "natural duration" of the disease.

Earlier observations had shown that "natural duration" varied considerably with the organ affected. It had long been recognised that, especially in the breast, the course of the untreated disease might be extremely protracted, occasionally to 20 years or more, and it was also known that some cases ran an unusually rapid course. But the large series of observations collected for the Committee have enabled a useful series of average "natural durations" to be estimated on a large numerical basis. For some of the commonest accessible sites they are as follows:—

Breast	38 months.	Tongue and mouth	16 months.
Uterus	20 ,,	Larynx	14 ,,
Rectum	26 ,,	Œsophagus	12 ,,

Data for Cancer of the Uterus; Alternatives to Surgical Treatment.

Turning now to the site next investigated—the uterus—it may be said briefly that much the same principal deduction from the public health standpoint emerged—viz., that the earlier the disease was surgically treated the better was the result. Moreover, similar conditions prevailed in respect of delay in seeking treatment, the average interval in this case being somewhat shorter than in the case of the breast. This presumably is to be correlated with the shorter natural duration.

But for cancer of the cervix uteri an entirely different factor came into the field of investigation—viz., the alternative method of treatment by radiology—necessitating a comparison of its results with those of surgery. Broadly it appeared that in operable cases the percentage of survivals to five years might be approximately the same for both kinds of treatment—viz., 40. Additionally, of those patients who were beyond the reach of surgery some 10–12 per cent. were freed of their disease for the same period by radiological methods. When it is remembered further that these results of radiology are obtained at practically no immediate risk of death and that in more advanced cases still, where eradication of the disease seems out of the question, considerable alleviation of symptoms can be secured, it becomes clear that at this site we have a method of treatment equal if not superior to surgery.

From the public health standpoint another aspect should be mentioned. It seems probable that, with wider use of a method of treatment less repugnant to most women than operation, one of the probable reasons for delay in seeking treatment may be eliminated and opportunities for securing a larger proportion of survivals improved.

If this attitude towards the treatment of cancer of the cervix is broadly true it gives a different orientation to the subject and brings it much more closely into the sphere of "public action." One has only to consider the cost and special nature of radium, the complexity and delicacy of deep X ray apparatus, and the specialised skill needed for its application. A greater degree of organised centralisation for radiological treatment becomes inevitable if radiological treatment is to effect the great benefit and life saving which it can apparently produce.

Data for Cancer of the Rectum.

With the aid of the Departmental Committee the Ministry of Health has also undertaken an investigation of the literature relating to the surgical treatment of rectal cancer. This proved more difficult and in some ways less conclusive than those into cancer of the breast. The operative treatment was more recent and less standardised, a greater number of variable factors to be taken into consideration, while in this case there is greater difficulty of diagnosis and greater inaccessibility of the growth. Though the operative mortality was high (about 16 per cent.) the proportion of survivals to three years amounted to nearly 40 per cent. Here also the average delay between the onset of symptoms and seeking treatment was serious, extending to 13 months—an important reason for the rarity with which these cases could be regarded operable.

Relationship of Cancer to Dietary.

A subject which has given rise to much theorisi is the possible relationship of dietary to cancer. T line of thought commonly followed is that as nat races, whose diet is more "natural" than that white races, suffer from cancer to a less degree th others, the two events are probably correlat Whether it is true that native races are less affec is really not yet known; much has been said on t subject, but the data needed for judgment do n exist. But supposing it to be the case, it does n follow that the native immunity is to be explained the existence of a causal relationship between diet a cancer. The Departmental Committee in this c nexion was fortunate enough to have a good opp tunity for inquiring whether cancer mortality was l in members of religious orders subjected to cert dietetic restrictions. A somewhat detailed investi tion failed to adduce evidence in support of t contention.

Reports and Further Programme.

The technical reports in which the forego deductions were drawn have been issued among series of Ministry of Health reports on Public Hea and Medical Subjects, published by H.M. Station Office.[1] In addition they have been made the basi non-technical memoranda [2] issued by the Ministry Health for the information of local health authori and the general public.

This kind of work at the Ministry of Health continuing—it is extending to radium treatme cancer of the skin and lip, and other matters. It is attempt at thorough stock-taking of the position one section after another, intended to be us not only to the Government departments and to l health authorities, but to practising physicians surgeons and to the public. It will also be of va I hope, for reference in future years; we would g much to be able to assess our progress by referenc similar comprehensive studies if they had been ma say, 30 years ago.

(2) CANCER COMMISSION OF THE LEAGUE OF NATIONS.

For appreciation of the inquiries into ca which the Health Committee of the League of Nat decided to regard as appropriate to its function may commend to your notice the summari report (C.H. 631, 1927) made recently by the Ca Commission, which covers the work done, with aid of its statistical subcommittee and other exp from 1923–27. They originated in an attempt account for the remarkable differences in morta at two sites, the breast and uterus, as shown in national statistics of three countries, England Wales, the Netherlands, and Italy. For exam the death-rate for cancer of the breast in the Net lands is little over one-half of that shown by English figures, and the rate in Italy is about half that of the Netherlands. As regards the ute the rates for Italy and the Netherlands are appr mately the same, being somewhat higher in

[1] P. H. and M. S.: No. 28, Cancer of the Breast an Surgical Treatment, 2s. 6d. No. 32, A Further Report on Ca of the Breast, with Special Reference to its Associated Antece Conditions, 3s. No. 33, A Report on the Natural Durati Cancer, 9d. No. 34, Report on the Late Results of Oper for Cancer of the Breast (Leeds), 6d. No. 36, Diet and Ca with Special Reference to the Incidence of Cancer upon Mem of Certain Religious Orders, 9d. No. 40, Cancer of the Ut A Statistical Inquiry into the Results of Treatment, bein Analysis of the Existing Literature, 3s. 6d. No. 46, Repo Cancer of the Rectum, 1s. 6d. No. 47, Report on the Treat of Cancer of the Uterus at the Samaritan Free Hospita No. 51, Report on the Late Results of Operation for Can the Breast (eight County Boroughs, England and W (in press).

[2] No. 426, Memorandum on Cancer. No. 476, On the E of Radium and X Rays Upon Normal and Cancerous Ti No. 496, On Cancer of the Breast, the Results of Treatme Operation. No. 516, Memorandum on Experimental C Research. No. 716, Memorandum on Cancer of the B No. 826, Memorandum on Cancer of the Uterus. All o able (1d. each) from H.M. Stationery Office, Kingsway.

rmer; but both are considerably lower than the nglish rate. Such differences are frequently to be nd in different parts of the same country, but in is case the national contrasts were strong and their vestigation seemed promising. Prolonged and haustive inquiries from the statistical, clinical, and her aspects were made into a whole series of factors nich might be thought to have produced these fects. Many plausible and conjectural explanations re taken up, but one by one were shown to be of validity. But while the explanation of these tional differences remains still hidden, and the mmission concluded that it is useless to seek rther for it, the investigations which were put in nd led to useful results in other directions. A rticularly interesting by-product was an anthrological distribution of races in Europe, worked out Pittard and Niceforo, with which known facts as cancer mortality were correlated. Much work nilar to that of the English Departmental Comttee was undertaken by national groups of experts, t only in Holland and Italy, but also in other untries. This settled various questions on the sis of the experience of several countries; for ample, it determined the statistical relations tween fertility and cancer of the breast; it conmed the dictum that the essential point in the ation of cancer of the uterus to parturition is the t of parturition and not the number of pregnancies, ile in regard to the success of early operations the eign statistics were closely parallel to that obtained the English group. The Commission insisted on actical lessons derivable from its inquiries, notably to the need for greater resort to surgery or radioy at appropriate stages, the importance of attention obstetric methods to prevent the occurrence of ronic inflammation of the cervix, and the advanges of greater national and local expert coöperation research into cancer problems. They considered o that their inquiries had shown that there is gent need, in all countries possessing an organised icial service of statistics of causes of death, to termine more exactly the degree to which certifican by causes is unsatisfactory and how its scientific lue may be improved. In the case of cancer such quiries should take account of the need for uniformly ributing cancer deaths to the primary site of currence.

Following this report, the Health Committee at neva laid down, last May, certain other lines of quiry for its Cancer Commission, which seemed to quire the kind of expert liaison which the League in position to supply. Among these are the different incidence of cancer associated with the same cupation in different countries, and the results of diological treatment of cancer. A subcommission expert radiologists and gynæcologists under the sidency of Prof. Regaud began its work last nth on the latter subject.

(3) The British Empire Cancer Campaign.

Imbued with the necessity of increasing the volume investigation devoted to the various means for ntrolling the disease, a body of public-spirited men dertook to form an organisation whose main object s, by financial assistance, to coördinate research, end existing research centres, and to stimulate the mation of new ones. The funds subscribed to the adquarters of the Campaign in London are alloed to individuals or centres who desire to carry investigations into any aspect of the cancer blem which is considered likely to be of value, ether direct or indirect. The annual reports of Campaign set out the allocations made and the rposes to which they were put.

Apart from the central organisation, provincial es have been initiated, among which may be ntioned the Yorkshire Council, which has collected arge sum of money and set up an active research tre in association with the University of Leeds. nilarly, another organisation, to embrace Lancare, Cheshire, and North Wales, seems likely to succeed in extending the existing facilities for research in the University centres of Liverpool and Manchester. Somewhat similar efforts, varying with local circumstances and conditions, have been set up in other county areas and university towns.

Another type of action taken by the Campaign is the publication of the *Cancer Review*, a journal devoted to improving the means by which English readers may become more readily acquainted with the work proceeding elsewhere both at home and abroad. There can be no doubt of the value which this journal already possesses for those interested in any of the scientific aspects of cancer research.

(4) Municipal Work.

Under this head it is well to draw attention to what is done in several important provincial centres to utilise the public health department, working through the medical officer of health, as a centre for the local study of the disease and for other practical effort in various directions. The work of several health departments, particularly those whose medical officers of health are included in the special subcommittee which meets at the Ministry of Health, has been invaluable to the inquiries which have been required for its Departmental Committee. Much of the information which has been needed in regard to the conditions associated with cancer, and those which require "follow-up" work, has been obtained by the medical or trained health visitor staff of these provincial centres. The local data have been valuable too for essentially local purposes; the health department has obtained present-day standards by which to measure progress in later years, while the local inquiries have brought out deficiencies which can be rectified in the matter of hospital and home treatment, and have permitted useful experiment. Thus in one or two centres trial is being made of special centres or clinics for women to facilitate early diagnosis of cancer of the breast and uterus. At others different methods of propaganda and educative action are adopted for the same purpose—lectures, talks, leaflets, and the like. The principle to be followed throughout all this local work is to secure the closest possible common action between the municipal health department and the authorities of the general and poor-law hospitals, the university if there is one, the voluntary agencies which support social work, and especially the staffs of hospitals and the medical practitioners—e.g., through the local branch of the British Medical Association—as well as the local work of the British Empire Cancer Campaign, where it is in operation. It is no part of the programme that municipal direction should be made prominent; it is enough for the health department if it can help. Where the medical officer of health is wanted to take the initiative he will do so, otherwise he is content to be one of many cogs on a useful working wheel. Personally I may express the opinion that cancer research has much to gain through his instrumentality, and the experience we already have is my justification.

In reviewing this brief outline of public action in England, and its recent developments, one is conscious of its patchwork, incompleteness, and even its inconsistencies and overlaps. Compared with some extensive efforts in the United States of which I have read, with the *centres anticancereux* throughout France, or with a State cancer institution such as is represented by the new Institut Victor Emmanuel III. in Milan, it may seem meagre. But at least it has in it the elements of elasticity and capacity for development on almost every side, whether in pathology, causation, diagnosis, or treatment, as occasion requires.

Victoria Hospital for Sick Children, Hull.—Last week the Right. Hon. T. R. Ferens opened a new ward and named it "The G. F. Grant Ward," in compliment to the treasurer, who has been associated with the institution for 40 years. The two rooms which compose the new ward will be used for ophthalmic, and nose, ear and throat cases respectively.

CHEMOTHERAPY IN MALIGNANT DISEASE,

WITH SPECIAL REFERENCE TO LEAD.*

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IN the few minutes at my disposal in which to open this discussion, I can do little more than briefly outline the scientific basis, the scope, and what may be the future developments of so-called "chemotherapy," especially lead-therapy, in the treatment of malignant neoplasia. First, however, it is necessary to decide what is meant by the word "chemotherapy." "Chemotherapy" probably dates from that remote period in the history of mankind when the treatment of disease was first recognised as being possible. But, as a science, "chemotherapy" came into existence in the last half of the nineteenth century following the bacteriological discoveries of Pasteur and the synthetic enterprises of Ehrlich. It is, however, somewhat unfortunate that the word "chemotherapy," which has a very general meaning, should have been adopted for use in the somewhat restricted sense in which it is usually employed to-day.

Definition of the Word "Chemotherapy."

"Chemotherapy" is defined in Dorland's Medical Dictionary as "Treatment based on the selective affinity which various chemicals have for the tissues of the body and for the organisms that may infect it."

Kolmer[1] states that "The term chemotherapy is difficult to define in a brief and concise manner," and he calls attention to the chemotherapeutical affinity shown by drugs like strychnine, digitalis, morphine, cinchona and the rest. It seems, therefore, that we are in need either of a less general term to describe the chemical methods applied to the treatment of parasitic and neoplastic diseases, or of a limitation of its meaning. "Chemotherapy" has become so incorporated in our medical vocabulary that limitation of its application would probably be the better procedure, and I would suggest the following definition. *Chemotherapy denotes treatment by synthetic preparations which have a selective therapeutical action on abnormal tissues of the body and on the organisms that may infect it, with or without the production of associated constitutional phenomena.*

Chemotherapy Applied to Malignant Disease.

Selective chemical treatment in respect of malignant neoplasia may be based on a belief in some supposed causal factor, such as a parasite. Doubtless in these circumstances the therapeutist would seek to develop along the recognised lines the known synthetic parasiticides, none of which is unispecific—that is, specific for one organism only.

Those of us who do not favour the idea of the existence of a specific parasite in connexion with cancer, but believe rather that malignant neoplasia is a specific growth-process (dedifferentiation)—a process that is initiated by many predisposing factors—will turn first to the quest of the mysterious agent or agents that normally control differentiation and somatic correlation. I have not time, nor would it be pertinent to a discussion on chemotherapy, as defined, to dwell on the many observations that have been made in respect of these phenomena, especially by means of experiments in vitro.

Failing to discover the biological—that is, natural biochemical—regulators of differentiation, we must seek some chemical substance that will arrest growth as such, and endeavour to discover one that has also an inhibitory action on the essential functions of the cancer cell, or a selective affinity for some part of its chemical constitution, and some influence on its physicochemical state. In order to produce its effect it should be possible for the chemotherapeutical agent to be injected into the blood stream, and it must reach the cancer cells. Further, in accordance with the principles of chemotherapy, the preparation should have as high a chemotherapeutic index as possible.

If our chemotherapeutical methods are successful we shall expect to find: (*a*) destruction of the neoplastic cells—necrosis; or (*b*) arrest of the growth (1) without complete disappearance, (2) with gradual disappearance; and we might add a third event although it is improbable—namely, the redifferentiation of malignant into normal somatic tissue.

If the growth be of large size and undergo rapid necrosis, it is hardly possible that the normal tissues of the host will deal with the necrosed tissue without surgical aid; but when the neoplastic cells are seriously damaged and their devitalisation is gradual the normal tissue reactions may be such as to lead to the removal of the dead or dying cells. This, apparently is what happens in successful treatment by X ray and radium.

Lead-therapy in Malignant Disease.

In order to make clear the rationale of the treatment of malignant disease with lead, I must digress first to explain our views on the nature of malignant disease, and, secondly, to illustrate the properties of lead that are concerned in the chemotherapeutic action that may occur.

I have spoken of the specific growth-process as dedifferentiation. It is impossible here to discuss the views that have been advanced on this subject. It is, however, a process that hardly admits of dispute at the present time. The essential point, so far as our own views are concerned, is that this reversionary process is directed towards the trophoblastic type—perhaps through, rather than to, that of the embryonic somatic anlage. Hence the adult somatic cell that undergoes dedifferentiation passes back through the later stages of somatic development before reaching the primitive type. Consequently malignant neoplasms vary considerably in the degree of dedifferentiation that they have undergone, and the most malignant tumours are those in which dedifferentiation is greatest.

In very malignant tumours we should, therefore, expect to find syncytium, as indeed we do. Furthermore, it may reasonably be held, as I have previously suggested, that those forms of so-called "chorion-epithelioma" that are unrelated to pregnancy, for example, "chorion-epithelioma" of the testis, represent merely a high degree of dedifferentiation, and, therefore, of malignancy. A large part of our work has, then, been directed to the demonstration of the chemicoconstitutional and functional—and not only to the morphological—resemblances between the chorionic epithelium and malignant cells of somatic origin.

Now, it seems that every chemotherapeutical agent employed in malignant neoplastic disease should have two attributes at least: (1) the power to arrest cell-growth generally; (2) a special affinity for malignant cells and the chorionic epithelium.

It has long been known that lead arrests growth generally and causes abortion in the human subject. We have repeatedly shown experimentally that the growth of plants and animals is very definitely checked by this substance. We have also demonstrated that lead in suitable doses causes coagulation necrosis of the chorionic epithelium and that abortion is the result of this, rather than a sequel to intrauterine hæmorrhage of toxic causation. The chemotherapeutical index of this effect by a pure lead colloid is approximately 2—a very low ratio. Moreover we and others have obtained experimental and clinical evidence that lead may cause a similar necrosis of cancer cells in favourable circumstances, but again the chemotherapeutical index is very low.

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* Opening a discussion on the subject at the International Cancer Conference on July 19th.

[1] Kolmer, J. A.: The Principles and Practice of Chemotherapy, with special reference to the Specific and General Treatment of Syphilis, 1928.

Lead in Tumours.

We have found that after treatment lead may be recovered from malignant neoplasms in considerable quantity. In two human cases the lead-content of the malignant tumour definitely exceeded that of the neighbouring normal tissue.

In the case of a carcinoma of the liver, secondary to carcinoma mammæ, the tumour held 41 parts per million of lead, and the adjacent, hepatic tissue 1 parts per million. This is an important observation, for lead is always present in large quantity in the liver after the intravenous administration of this metal.

In the other case, a periosteal sarcoma, the tumour contained 12 parts per million of lead, whereas the normal bone in the neighbourhood contained 1 part per million.

Waterman, likewise, has made interesting observations in regard to the lead-content of the primary tumour and pulmonary metastases in chicken sarcoma. His finding that the pulmonary metastases contained more lead than the primary growth may, perhaps, be explained on the ground of the vascularity of the lungs. Waterman has also shown that tumours treated with lead in vivo are not so readily transplantable as untreated neoplasms.

The Mechanism of the Action of Lead.

Although much work has been done by my colleagues, Prof. W. C. McC. Lewis and his associates, with a view to discovering in what way lead acts on normal growing tissues and on malignant cells, no very definite conclusions have, as yet, been reached; but it appears possible that the action in regard to cancer is both local and constitutional. In respect of the latter some observations on the restoration by lead of the lipase co-enzymic activity in the serum of cancer patients have recently been published by these members of the staff of the Liverpool Medical Research Organisation. It may be remarked, however, that the local effects are likely in the long run to be of much greater significance than the constitutional.

The position at present, then, is that lead inhibits growth and affects the cancer cell deleteriously. Whether this selective action is associated with growth processes only, or in addition, as we think probable, with some special function or constitution of the cancer cell, remains to be finally proved; the question has, however, an important bearing on the chemotherapeutical aspect of the subject.

Apart from this there is another matter that has exercised our minds, and it is this. Since, from whatsoever angle we regard dedifferentiation, we must come to the conclusion that cancer cells resemble in many ways morphologically and functionally the cells from which they are derived; and it follows that the less dedifferentiated the cells are the more they will resemble those from which they arise. For illustration we may mention cancer of the thyroid and cancer of the liver.

It seems, therefore, that in the synthetic preparation of any chemotherapeutical substance, such as a lead-complex, we should take into account not only the specific action of the remedial agent in regard to growth and the malignant cell generally, but also, so far as our knowledge permits, we must consider the special chemical constitution, function, or evokable reactions of the differentiated (specialised) tissue in which the malignant neoplasm has developed. For example, it may be suggested that a sulphur-lead complex should be specially useful in cancer of the skin. One can envisage that the ideal combination would be one in which the affinity of the lead for the sulphur was such that the combination would only be broken by the cancer cell, without previous alteration of the lead-complex.

This method is, of course, simply a way of making the poison more acceptable to the cancer cell, and of enabling it to reach its objective, and so produce the maximum effect.

If it were found possible to make on these lines a preparation of lead which was absolutely specific for any one well-defined type of malignant growth, it would appear that the lead preparation used should vary according to the original tissue from which the neoplasm has sprung.

The Present Position of Lead-therapy.

On such an occasion as this, and in the presence of so many distinguished investigators in the difficult field of cancer research, all of whom know that patience is required in the final solution of this problem, I have felt it wise to confine my remarks meticulously to the title assigned to the discussion and to the time allotted to me.

I have said enough to show that even though we have reached the stage of believing that lead is detrimental to the cancer cell, just as arsenic was long known to be to the spirochæte, we have still far to go; consequently, an analysis of our clinical results, however interesting, would be informative only in respect of the beneficial effects observed, and I have on several previous occasions adduced evidence on this point.

If there is to be discussion of the continually changing position in respect of clinical treatment, I would indicate, if I may be permitted to do so, the lines along which such discussion may, perhaps, most profitably proceed: (1) the preparation of lead employed; (2) the methods of administration; (3) the effects on cancer of the administration of lead followed by exposure to radium; (4) the same followed by exposure to X rays; (5) the effects on cancer of operation, including diathermy, followed by (or preceded and followed by) the administration of lead; (6) the effects on cancer of the administration of lead alone; (7) the effects of lead on other hyperplastic and neoplastic diseases, such as lymphatic leukæmia and lymphadenoma.

I anticipate that the consensus of opinion will bear out the statement I made in the first paper published on this subject (1922) that the effects of radiations are augmented by the previous use of lead. Also, the employment of lead as a prophylactic measure against recurrence after surgical operations for cancer, will, I think, be held to be of great value. Last, but not least, there is a considerable body of evidence supporting the view that by itself lead, even in the crude preparations now used, can cause the disappearance and apparent cure of malignant neoplasms in favourable circumstances, and sometimes can beneficially affect leukæmia and other neoplastic conditions.

Evidence that may be adduced to controvert these statements must be analysed in regard to the modes of procedure practised, and the nature of the cases to which the treatment was applied.

In conclusion, I would repeat that which I have attempted to indicate in my remarks, namely, that the problem of successful chemotherapy in malignant disease, on the basis of the definition I have submitted, is one of extraordinary complexity, but that it is one which is worthy of careful investigation and exploitation.

NORFOLK AND NORWICH HOSPITAL.—After holding for 37 years the post of honorary physician to the Norfolk and Norwich Hospital, Dr. F. W. Burton-Fanning has resigned. In their resolution of appreciation of his services the Governors congratulate him on researches which have increased the sum of general medical knowledge and enhanced the reputation of the hospital.

WAKEFIELD CLAYTON HOSPITAL.—Last week Mr. G. C. Childs, of Camden, New Jersey, a Wakefield man, who has made a fortune in America, opened a new out-patients' wing which he has provided at a cost of £30,000. The accommodation includes departments for the ear, eye, and throat, massage, ultra-violet rays, dental surgery, medical and surgical consulting rooms, casualty rooms, an operating theatre, and a dispensary. Mr. Childs has promised, in addition, to provide a new ward.

TWO CASES OF "CONTRACTION RING."

WITH OBSERVATIONS ON TREATMENT, ESPECIALLY BY AMYL NITRITE.

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THE first account of a case of "contraction ring" is by Smellie,[1] who in 1743 visited in a workhouse a woman who had been in labour five days and "neglected by the surgeon and midwife of the house." He found that the head was low in the pelvis and tried to deliver her with forceps, "but," he adds, "was surprised that I did not succeed when I found the head was not large, the instrument so easily introduced and firmly fixed." He performed craniotomy, and fastened a hook in the skull, but could not, with all his strength, bring it along. After removing the skull bones he "found the under part of the uterus strongly girt or contracted round the neck of the fœtus." "This I gradually dilated, bringing down one of the arms, and pulling on that and the shattered bones and scalp with both my hands, I at last extracted the child with greater ease than I expected. . . . In pushing up my hand to dilate, my fingers passed the mouth of the womb that was girt round the middle of the head, when I was surprised to find another contraction before the shoulders." The puerperium in this case was prolonged.

The next case is that of Baltzell,[2] who describes early rupture of the membranes and a long labour in an extremely fat and corpulent primigravida. After several attempts at delivery the final treatment adopted was "abstraction of blood by copious venesection to relax the system and to embrace the moment of its immediate effect to extract the fœtus with the forceps." This also failed, and the patient expired after 70 hours. Four hours after death a post-mortem examination was made, and it was found that "near the neck and shoulders of the child, the uterus had the appearance as if a circular band about half an inch wide had been forcibly drawn round it."

In 1870[3] Gay described a case of obstructed labour in which the bony pelvis was normal, and with some difficulty he managed to get his hand above a ring of contraction in the uterine wall. Here his hand was "trapped," and, being unable to withdraw it, he proceeded to make a more complete study of the condition, which was typical of what we now know as "contraction ring." In 1882 Smith[4] published the "first work on the question" (Chéron). This consists of a weighing of the evidence for and against Bandl's hypothesis of the formation of a new cervix in the later months of pregnancy from the lower segment of the uterus, upper part of the vagina, and cervix uteri. This idea had already been sharply criticised four years previously by McDonald[6] of Edinburgh, who maintained that Bandl's ring was "conspicuous only by its absence." Smith's own contribution to the matter was a collection of 30 cases of "hour-glass contraction," from which he excludes all "doubtful cases, such as rigid os." He makes no mention nor distinction of the condition now known as "tonic contraction." In 33 labours of 30 women, 8 mothers and 25 children were lost. Three women died undelivered, and, as only seven of the women were primiparous, the remainder had presumably had previous successful pregnancies; this would largely exclude from his series tonic contraction due to mechanical obstruction. He points out that the most general symptom present in these cases is early discharge of liquor amnii. Seven children were saved by turning, and one child by forceps. "The craniotomy record is sickening"—ten cases. He discusses the possibility of Cæsarean section, but finally sums up against it.

Chéron's exhaustive treatise of 1899[7] describes 59 cases; the author had personal knowledge of 18. He makes no distinction between "hour-glass contraction" and the retraction of obstructed labour. In fact, he makes the following statement: "La rétraction isolée de l'anneau de Bandl est un phénomène qui n'est point démontré par les faits cliniques; il est toujours accompagné par la rétraction du corps utérin." Of the cases described, many are clearly associated with pelvic contraction, and his summary of the causes of the condition shows confusion between the two main types recognised at the present time. Among maternal causes he gives obstruction to the passage of the fœtus, early rupture of the membranes, prolonged labour, the premature use of ergot, and in particular the use of bags. Of fœtal causes he states that the most common are shoulder, incomplete breech, and face presentation. The paper is largely concerned with the comparative difficulty and danger of embryotomy and version.

Herman,[8] in 1902, doubted the existence of contraction ring.

Clifford White,[9] in 1913, drew a distinction between contraction ring and retraction ring. In reviewing the treatment to be adopted in contraction ring he first observes that expectant measures are useless and quotes cases in which they had failed. He mentions the drugs in common use at the present time—i.e., chloroform and morphia—and also two cases successfully treated by amyl nitrite. None of these drugs does he regard as of material value. In his series of 90 cases he finds that where no laparotomy took place the maternal mortality was 58 per cent. and the fœtal mortality 63 per cent. In those in which laparotomy was performed the maternal mortality was 31·5 per cent. and the fœtal mortality 42 per cent. He mentions Willett's[10] method of continuous weight-traction, first employed in 1911, in which a weight of 8 lb., representing a pull of 6¼ lb., brought about delivery after three hours. Williamson, by gentle traction with forceps in 15 minutes, had similar success, marred only by incomplete rupture of the uterus. A third case of contraction ring causing obstruction to the delivery of the after-coming head and overcome by gentle traction was described at the same time.

Author's First Case.

CASE 1 was a primigravida of 27, due to be delivered Nov. 6th, 1927. She had a bony frame of large proportions and was grossly obese, so that accurate examination was impossible. Her medical history was stainless, beyond the fact that since puberty she had become extremely fat and heavy. She said that her weight was 17–18 stone. Labour pains began at 1 A.M. on Oct. 20th, and became slowly more severe and frequent up to 3 A.M. on Oct. 21st, the membranes having ruptured shortly before that hour. Her doctor was sent for, and, finding the os fully dilated, attempted to deliver her with forceps. In this he was unsuccessful, and summoning further assistance, he examined her under chloroform, found that the occiput was posterior, and again failed to deliver her.

On admission to hospital her pains were moderate in severity, her temperature 98·4° F., pulse 96, and lacerations were present at the vulva. The uterus could barely be made out; the presentation could not be determined, and the fœtal heart could not be heard; this was not surprising in view of the thickness of the abdominal wall. Vaginal examination without an anæsthetic was impossible, owing partly to tenderness of the lacerations and partly to the swelling surrounding the vulva. At 10.45 A.M. an anæsthetic was given, and examination showed that the os was fully dilated. The vertex was only moderately low and had not reached the pelvic floor. It lay well in the brim, and it seemed clear that the pelvis was causing no obstruction to the passage of the head. The occiput lay posteriorly. Attempts at rotation were fruitless, and no rotation could be achieved even when the vertex was with difficulty pushed just above the pelvic brim. The diagonal conjugate was 4 inches. It was not possible to get the hand above the head, but this was thought to be due to general mechanical difficulties of examination, and no further cause was sought. Finding no obstruction to the descent of the head, the forceps were applied, but soon abandoned when even strenuous efforts failed to cause any descent.

Examination by Dr. J. P. Hedley an hour later revealed a non-pulsating cord around the child's neck, and at once this a rigid band of uterine muscle closely surrounding the neck. The lower border of this band lay just above the level of the pelvic brim. The skull was perforated, the brain of the vertex removed, and a cephalotribe fixed to the

of the skull. A six-pound weight was fixed to the cephalotribe over a pulley at the end of the bed. The patient was given morphia gr. ¼ and scopolamine gr. 1/150. For the following eight hours the patient was kept in a comatose condition with scopolamine and a brief pain occurred about three times per hour. A 12 midnight a smell suggestive of gas gangrene was observed, and an hour later bubbles were expressed from the vagina, and *B. welchii* infection was confirmed by smears. It was decided to remove the fœtus as soon as possible.

At 3.45 A.M. a further anæsthetic was given, and vaginal examination revealed a definite relaxation of the contraction ring, although there was no apparent descent of the fœtus. The ring was now about 2½ inches in diameter. Embryotomy was performed. The right arm was pulled down and amputated near the shoulder, and then the left arm was pulled down with a crochet and avulsed at the shoulder. Traction on the base of the skull still had no effect, and internal version was found quite impracticable, as the contracted zone was some 2 to 3 inches in length. Further morcellement seemed to be the only possible mode of delivery, and the thorax was crushed with a cephalotribe. Traction then enabled the thorax to be half delivered at the vulva, but further progress was impossible owing to the breech being caught above the ring. This was ascertained after the body had been completely eviscerated to allow room for the examining hand. It was clear now that delivery could only be completed by splitting the breech. This was effected with cleidotomy scissors. An assistant held the spine firmly while the operator snipped at the one close to the junction of spine and pelvis. Some progress being made through the bony tissues, the spine was twisted strongly and, with a few more snips, became detached. It transpired that section had been made through the left sacro-iliac joint and avulsion occurred at the right. The sacrum was removed with the spine. It was then comparatively simple to divide the symphysis pubis anteriorly and, after tearing through the soft tissues, to remove each leg with the corresponding ilium, ischium, and pubis.

The placenta was removed manually, and this operation revealed a rigid canal closely fitting the wrist, about 2 to 3 inches long, above which the hand could move freely in the fundus. No uterine lacerations could be felt. The placenta was normal, and the loss of blood in the third stage was negligible.

A peroxide of hydrogen douche was administered and antigas treatment instituted. The pulse was 152–160, temperature 98·6° F. The patient's condition appeared to improve up to the sixth day, but a rigor occurred on the seventh, and she died on the eighth day after delivery, from acute toxæmia. At autopsy, a sloughing perforation was found at the lower and posterior part of the uterus, communicating with the pouch of Douglas. There was also a small uterovesical fistula. The internal surface of the uterus and vagina was green and necrotic, and the septic infiltration had reached the muscular coats.

I wish to thank Mr. L. W. A. Lankester for assistance at operation and careful notes, and Dr. J. P. Hedley for his assistance and permission to publish the case.

It was the unsatisfactory method and result of treatment in this case that stimulated an inquiry into the history of the condition.

It is clear that no satisfactory line of treatment is at present known. Cæsarean section is probably the method of choice when the condition is diagnosed before any serious attempts at delivery per vaginam have been made. But this seldom occurs (even Mellie tried the forceps first), owing possibly to the fact that undue internal manipulations play a part in the causation.

Treatment with Amyl Nitrite.

In a survey of the literature one method of treatment alone seems to have met with universal success. In four cases gleaned from the literature, and a fifth in which it has recently been employed, the inhalation of amyl nitrite has been followed by delivery.

CASE 2.—In 1882—i.e., 15 years after Brunton's [11] first experiments with cases of angina pectoris—Barnes [12] was called to a woman, aged 22, who was recently delivered of her second child. The placenta had been retained for six hours. The external os and cavity of the cervix were fully dilated and a contraction was present at the internal os and above it, which only allowed the admission of one finger. On inquiry it transpired that the midwife had given ergot as soon as the child was born, and as an antidote to this, Barnes administered 3 drops of nitrite of amyl on a handkerchief. He described the effect as follows: "During the inhalation the ring of muscular fibres round the os internum, which had been so rigid as to be absolutely undilatable, steadily yielded until I could pass the whole hand into the uterus and reach the placenta, which was universally adherent."

CASE 3.—In the next year Steele [13] described a similar case in which he employed amyl nitrite, having read Barnes's report. The woman was a negress who had been delivered five hours previously and had lost a considerable amount of blood. The report continues as follows: "no effort had been made to remove the afterbirth. She had been and was still having 'pains.'" Having learned this, I supposed I would have but little trouble, so I gave a dose of ergot as a precaution against after-hæmorrhage, and proceeded by expression and slight traction to remove the placenta. After considerable effort and further examination I concluded that I had hour-glass contraction to deal with sure enough, and, fearing that the ergot might possibly make matters worse, I proceeded to make her inhale the vapor of amyl freely. When she began to feel the effects of it, I handed the handkerchief to the "granny" that the amyl might be continued, while I made effort to remove the placenta. The finger, as before, could easily follow the cord up to the slightly contracted part of the womb, but it would go no further, and my efforts at removal failed again. All this time (only a few minutes, however) she had been inhaling the amyl. I now oiled my hand and arm, determined to proceed in the orthodox way, but on introducing my hand into the vagina I was gratified to feel the placenta already slipping out of the womb. It was removed without further trouble and the woman did well."

In 1906 Soutar [14] described two cases.

CASE 4.—The patient had been 24 hours in labour with a shoulder presentation. The uterus was in a state of continuous or tonic contraction, and attempts at version were futile. The ring of contraction admitted only three fingers. Embryotomy was attempted, the arms were cut off, but further progress was impossible. "At this juncture it happened, fortunately for the patient, that her general condition caused Dr. Kennedy to point out that she had had as much chloroform as he considered safe, if not a little more. As her pupils were rather dilated and her breathing shallow, I suggested giving a 10 minim inhalation of amyl nitrite as an antidote to the chloroform. I cannot take any credit for anticipating that which happened next; but fortunately I still had my hand in the vagina, trying to overcome the grasp of the womb and bring down a leg. My confrere snapped two 5-minim capsules of amyl nitrite and held them under the patient's nose. After what seemed like an interval of about 10 seconds, and suddenly, as if something solid had given way, the contraction of the womb relaxed under my hand, which passed easily up to the fundus and seized a leg, after which the delivery was finished in a few minutes." No notable hæmorrhage occurred.

CASE 5.—This was a multipara who had been in labour for 24 hours and appears to have had a contraction ring. Soutar bore in mind his previous experience, but understood the value of a control. In his own words: "For the sake of accuracy we decided to make an honest try to deliver with chloroform alone if possible." Attempts with forceps failed, and he was satisfied that delivery by this means was impossible. The inhalation of 10 minims of amyl nitrite was followed by sudden delivery. "So suddenly and completely did all contraction cease for the moment that the child was lying on the bed before my colleague (having given the inhalation) had time to fetch his bag from the next room." There was no post-partum hæmorrhage.

Author's Second Case.

I am greatly indebted to Dr. J. Ingram, of Devonport, for the opportunity of seeing and reporting the following case.

CASE 6.—A woman of 43 was in the eighth month of her eleventh pregnancy. She had had six living children at full term, one stillbirth at full term, one at eight and a half months, and two at eight months. Labour pains began at 10 A.M. on March 20th, 1928, and were described as "terrible" until the membranes ruptured at 2 P.M. The pains then ceased until at 4 P.M. she had a severe pain which was followed by considerable hæmorrhage (15–20 oz.). Examination at 4.30 P.M. showed the vagina and lower uterine segment to be distended with blood-clot. The os was perceptible as a slack ring in the wall of the lower uterine segment. There was no contraction of the bony pelvis. At a distance of 1½ to 2 inches above the os the uterine wall was contracted to form a rigid canal extending upwards for at least 2 inches and uniform in diameter—about 2 inches. There is no doubt that this was a true contraction ring. Through it could be felt the lower limbs of a premature infant. A leg was brought down, a fillet attached to the ankle and firm traction made upon it. This resulted in avulsion of the foot. The other leg was

brought down and the abdomen of the fœtus was now embraced by the ring so tightly that no further progress could be made. Conditions were unchanged for ten minutes, when an inhalation of 6 minims of amyl nitrite was given. For one minute no change could be felt in the consistency of the ring, but at the end of this time traction on the trunk caused easy descent of the fœtus and further examination of the ring was not practicable. Delivery was complete in three minutes. The placenta was retained in the uterus, and as the condition of the patient was poor as a result of antepartum hæmorrhage, the placenta was expressed by Crédé's method, without much difficulty. Hæmorrhage in the third stage was slight. The fœtus was about 1½ months premature, and stillborn. The head was not grossly misshapen. The puerperium was normal.

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STEREOSCOPIC RADIOGRAPHY OF THE CORONARY CIRCULATION.

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At a meeting of the Association of Physicians of Great Britain and Ireland held in Belfast in June, 1927, I had the privilege of showing a series of radiograms in stereo of hearts and kidneys injected with an opaque emulsion. In answer to a large number of inquiries, I propose to give a brief account of the technique used and a few observations from a study of the injected hearts.

Technique.

Removal of Heart from the Body.—A portion of the great veins must be removed intact with the heart. This is essential if troublesome leakage from the atrial vessels is to be avoided.

Opaque Medium.—Röntyum, a preparation of barium, was found to give the best results. This substance forms a very fine and stable emulsion. Röntyum, 40 g., is emulsified with distilled water, 75 c.cm.

Fig. 1.

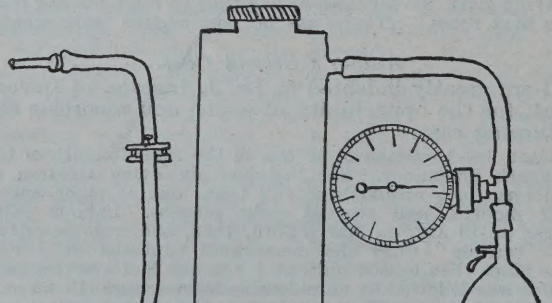


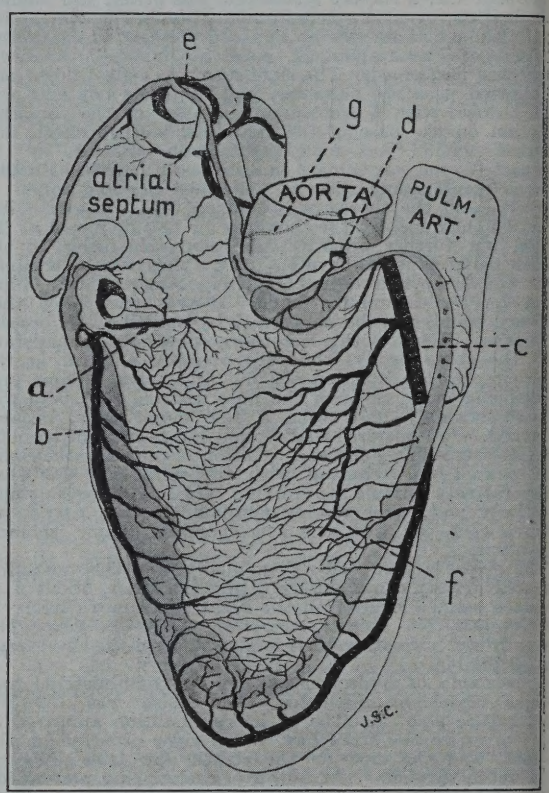
Diagram showing the apparatus.

Apparatus.—The diagram (Fig. 1) is self-explanatory. A pressure of 280 mm. of mercury is maintained for three minutes.

Fixation.—After injection of both coronary arteries th chambers of the heart are packed with wool and the orga immersed in 10 per cent. formalin for 24 hours to secur fixation in the best position for stereoscopic examination.

This simple method has been found to give satis factory pictures when a stereoscopic X ray photograp

Fig. 2.



Line drawing from stereophotograph of the cardiac septa (rig aspect) showing a septal anastomosis and blood-supply of t neuromuscular tissue. (*a*) Ramus septi fibrosi (art. to A node and bundle). (*b*) Right coronary, post. descendi branch. (*c*) Left coronary, ant. descending branch. (*d*) Orig of right coronary. (*e*) Ramus ostii cavæ superioris. (*f*) Arte entering moderator band (ramus limbi dextri). (*g*) Arter anastomotica auricularis magna. Kugel[4] describes this bran and found it arising from the left coronary in 66 per cent. of h specimens. I noted it in 62 per cent. in my series. Origin ramus septi fibrosi: from the right coronary, post. circumfl br. 83 per cent. (Gross—92 per cent.); from the left coronar post. circumflex br. 17 per cent. (Gross—8 per cent.).

has been taken of the injected specimen. Th skiagrams demonstrate very clearly the finer ramific tions of the cardiac vessels, while small variations their calibre can be readily noted. A fuller interpret tion of the skiagrams necessitates detailed knowled of the minute anatomy of the cardiac circulation, f which I am indebted to the work of Gross.[1] Th variations in the distribution of the coronary vesse as noted by him were confirmed, but their occurren has been greater in my series. The alteration in th relative vascularity of the ventricles which comes wi advancing age, and results in a decrease of the bloo supply to the right heart through an increase in th development of anastomotic branches, was al verified. Diminishing vascularity of the heart simil to that found in senility was found to accompan coronary disease.

The Coronary Anastomotic Network.

Removal of portions of the ventricular walls ma possible a stereoscopic study of the septal circulati and the supply of the neuromuscular tissue. Fig. illustrates a rich anastomosis in the septum. In th case the ramus septi fibrosi (artery to the auricul

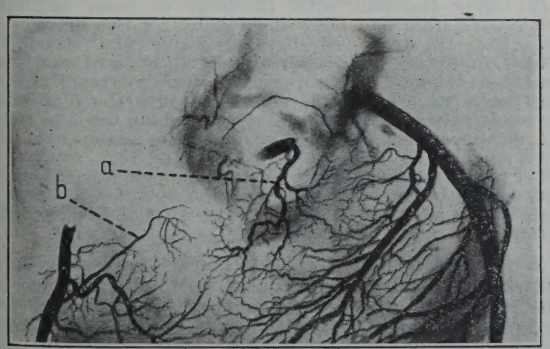
ventricular node and bundle) is seen to form seven distinct connexions. These are: (*a*) Through its branch to the atrial septum with a posterior atrial vessel, a descending branch of the ramus ostii cavæ superioris, and anterior atrial branches from the right and left coronaries. (*b*) In the interventricular septum with branches from the right and left coronaries, and a branch arising from the right coronary near its origin. Of this last vessel, which occurs in 20 per cent. of my series, I can find no previous mention. Its importance, moreover, merits a fuller description. Leaving the under surface of the right coronary close to its origin, it runs downwards and backwards in the substance of the crista supraventricularis to reach the interventricular septum, where it anastomoses with the septal branches of the anterior descending division of the left coronary (Fig. 3) and, in some instances, with the ramus septi fibrosi. This artery was present in five hearts showing extensive disease of the proximal portion of the anterior descending branch of the left coronary. It may assist in supplying the right limb of the bundle.

Stress is laid on this anastomotic network supplying the neuromuscular tissue because of its importance in the interpretation of clinical findings. Injury to the conducting tissue (heart-block, bundle lesion) is shown on electrocardiographic tracings. Tracings in cases of coronary occlusion show these rarely; in some they are transient,[2] the ordinary blood-supply being apparently able to protect this important tissue. Géraudel[3] reports two cases of Stokes-Adams syndrome in which the ramus septi fibrosi (artery to the node and bundle) was stenosed. My present series includes a case in which partial occlusion of this vessel did not produce a lesion recognisable by the electrocardiograph. This heart showed a well-developed atrial branch of the ramus septi fibrosi communicating with the anastomotic network in the atrial septum.

The attention that is being focused at present on the clinical diagnosis of coronary thrombosis adds interest to some of my cases. I shall pass over them briefly here as a more detailed survey of the series is in course of preparation.

It was observed that an early sign of coronary disease was a narrowing of the lumen of the small twigs of the coronary vessels. This gave these small vessels an appearance of having been nipped just at the point of leaving the parent vessel. Numbers of hearts were found with partial or total occlusion of a coronary artery or its branches. Five of these presented a large area of infarction, others fibrous plaques in the myocardium, while others showed no lesion apparent to the naked eye. These hearts

FIG. 3.



Skiagram of upper portion of interventricular septum. (*a*) Artery present in 20 per cent. of cases (additional supply to right limb of A-V bundle). (*b*) Ramus septi fibrosi.

without exception had highly developed compensating anastomotic channels, a beautiful subendocardial network in a case of gross infarction being sufficiently rich to preserve the lining layer of the organ. Two specimens of complete right coronary occlusion are of especial interest. Röntyum injected into these via the patent left coronary artery was found to have filled the occluded right coronary. This occurred through connecting channels chiefly in the interventricular septum.

This article refers to the first 92 hearts in my series.

My best thanks are due to the honorary staff of the Royal Victoria Hospital for the material put at my disposal; and to Mr. Leman and Miss Baird, of the radiological department, for their technical assistance.

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Clinical and Laboratory Notes.

SERUM PROPHYLAXIS IN MEASLES.

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IN recent years attention has been more and more directed to the study of measles, and while an advance has been made in the provision of increased hospital accommodation for the treatment of the disease, the preventive aspect has not received its due recognition. It is 12 years since Nicolle and Conseil, in France, and Park and Zingher, in America, first published the results of their work in this direction, and since then comparatively little additional literature has appeared on the subject. This paper is based on work at Monsall Hospital, Manchester, the opportunity for which was furnished by an epidemic of measles of considerable proportions in that city during the last few months of 1927.

It is well known that the serum of patients convalescent from measles can be used either to prevent or to attentuate the disease. At times when measles is epidemic it is inevitable that the wards of an infectious diseases hospital should become cross-infected, and any remedy for this state of affairs should be extremely valuable. As the epidemic period of measles is rather limited, it was all the more desirable to concentrate on the preventive use of serum, and accordingly no work was done on sero-attenuation of the disease.

For the provision of serum the choice of donors is necessarily limited largely by the age-period of the disease. This was one of the greatest difficulties, and full use had to be made of the few adult patients who were admitted. The donors who kindly provided blood for this work were mainly nurses from other institutions in the city who had the misfortune to contract measles. Two to three hundred cubic centimetres were removed when possible, the time chosen being from the seventh to the tenth day after deferrescence.

The procedure followed in the preparation of the serum was that of Debré and Joannon, the details being as follows:—

1. The blood after removal from the donor was allowed to coagulate at room temperature for 36 to 48 hours. 35 to 40 per cent. of serum was obtained.

2. A Wassermann reaction was performed with each sample of serum.

3. The serum was heated at 56° C. on two successive days.

4. The sterility of each sample of serum was tested by cultural methods.

5. Serum from at least three donors was pooled.
6. The mixed sera were tested by cultural methods.
7. The serum was stored in an ice-chest until required.

The serum was administered subcutaneously and a uniform dose of 10 c.cm. was employed irrespective of age and the length of exposure. No untoward effects were noted, nor were symptoms of serum sickness observed in any case. The details of the experimental work in chronological order are given below.

Experiment 1.—Measles broke out in a scarlet fever ward containing 14 children, six of whom were not recorded to have had measles, and of these, three were adjacent to the infective case, who was, of course, removed to an appropriate ward. The three nearest susceptible children were inoculated on the third day after exposure. Within six weeks the three uninoculated children developed measles along with three other children who were recorded to have had measles previously. The three inoculated children, aged 2, 4, and 4½ years, were under observation in the same ward for 62, 45, and 30 days respectively, and in spite of repeated exposure, failed to develop measles.

Experiment 2.—Three scarlet fever patients occupied a room with accommodation normally for one adult patient. None was stated to have had measles. One child developed the disease and was removed, and the youngest contact, aged 3 years, was inoculated on the third day after exposure and failed to develop measles during 28 days' observation. The remaining patient, aged 5 years, duly developed measles after the normal incubation period.

Experiment 3.—A baby, 2 months of age, was sent to hospital in error in an ambulance along with another infant suffering from measles. Infection was presumed to have taken place, and the baby was nursed in a measles ward, having been given serum on the third day of exposure. No symptoms were noted during observation for a period of 20 days.

Experiment 4.—Following the occurrence of a case of measles in a bed-isolation ward, three children, aged 3, 2, and 4 years, received prophylactic inoculations on the third day after exposure. Six days later another child developed measles, and after a further 11 days the sole remaining susceptible patient developed the disease. The inoculated children were under observation for periods of 51, 32, and 40 days respectively, and showed no symptoms.

Experiment 5.—An infant, 3 months old, in contact with measles at a children's hospital, received serum on the third day after exposure, and was nursed in a measles ward. No symptoms were noted over a period of 47 days.

Experiment 6.—Measles infection appeared in a diphtheria ward, and the only known susceptible children were two brothers, 5½ and 7 years of age. The youngest child only was inoculated on the third day and remained free from symptoms, while the brother developed a typical eruption on the fifteenth day after exposure.

Experiment 7.—Two children unrelated, notified as suffering from laryngeal diphtheria, were nursed in the same steam tent for 24 hours. Unfortunately, one proved to be in the prodromal stage of measles. The other, an infant of 6 months, was thereupon inoculated and failed to contract the disease during a month's observation.

Experiment 8.—A scarlet fever ward became cross-infected with measles. The five known susceptible patients, with ages varying from 2½ to 7 years, received serum on the second day after the occurrence of the case. It was hoped thereby to stamp out the infection. After the usual incubation period, a child stated to have had measles previously, contracted the disease, and, after a similar period, an adult, also stated to have suffered previously from the disease, developed typical symptoms. None of the inoculated children developed the disease.

Experiment 9.—Two days after exposure the only two children who were known to be susceptible in an infected diphtheria ward received prophylactic inoculations. Neither developed measles, and no further cases occurred in the ward.

Conclusions.

1. Measles convalescent serum is a safe and reliable prophylactic remedy, if given in adequate dosage within the first three days of the incubation period.

2. The use of convalescent serum is necessarily limited by the difficulty in obtaining suitable donors.

3. A history of an attack of measles in a child is frequently unreliable. This circumstance limits the absolute control of measles in a children's ward by the use of convalescent serum.

COMBINED VITAL AND NON-VITAL METHOD OF STAINING CORPUSCLES.

BY A. CECIL ALPORT, M.D. EDIN., M.R.C.P. LOND.

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THE following method of staining blood films is comparatively simple, and with a little experience can be carried out as a routine practice in all cases of anæmia. The original method of staining reticular cells was to take a drop of blood on a cresyl-blue stained slide, cover it with a cover slip and place it in a moist chamber in an incubator for 15 to 20 minutes; then a film was made by moving the cover slip over the slide, and finally it was counterstained with methylene-blue or Leishman's stain. This technique, however, is too complicated for general use. The method described below has the advantage not only of staining the reticular cells with cresyl-blue and the leucocytes with Leishman's stain on the same slide, but the technique is nearly as easy to carry out as staining a film with Leishman's stain only.

The method consists in :—

1. Staining a slide with brilliant cresyl-blue and making a blood film on this stained slide, or staining a drop of blood with cresyl-blue and making a film in the ordinary way.

2. Counterstaining the film with Leishman's stain.

(1) *Technique of Vital Staining.*—There are two ways of staining the reticulocytes: (*a*) Take a clean, grease-free glass slide, pass it through a flame nine or ten times so as to heat it well, and dip it into a glass jar containing a 0·3 per cent. solution of brilliant cresyl-blue in ethyl alcohol; then stand the slide on end for a couple of minutes to allow the stain to dry, and polish it gently on a piece of smooth paper or with a soft handkerchief. It is essential to heat the slide well as this ensures an even spread of the stain, without which the result is not, as a rule, satisfactory. On the cresyl-stained slide take a drop of the patient's blood and make a thin film in the usual way. Wipe off the stain on the reverse side of the slide with a damp cloth. The film can be kept or stained immediately with Leishman's stain.

(*b*) I find that a 0·3 per cent. solution of brilliant cresyl-blue in normal saline, to prevent hæmolysis, with 0·2 per cent. potassium oxalate added to stop clotting, is a quicker and more satisfactory method of staining the reticular cells. Take a large drop of blood on a slide and add to it about the same amount of cresyl-blue from a pipette; mix thoroughly by drawing this solution into the pipette three or four times. Place a drop of the mixture on the end of a clean fat-free slide and, holding another slide at an angle of about 50°, make a film in the usual way. This is necessary in order to obtain a thick enough film, as on account of the dilution of the blood if the upper slide is held too low down the film may be too thin to be satisfactory. The dilution of the blood also allows of an even spread, and the making of a good film becomes a comparatively easy matter.

(2) Cover the film with 12 drops of fresh undiluted Leishman's stain and allow it to stand for two minutes to fix. Add 12 drops of distilled water and stand for 7 to 30 minutes. Wash the film carefully until nearly all the blue colour has disappeared and dry rapidly with blotting-paper. To be successfully stained the film must have a faintly blue tinge in it. Overwashing tends to cause the disappearance of the blue from the granules of the reticulocytes, as brilliant cresyl-blue is very soluble in water; underwashing leaves too much blue in the leucocytes and spoils the effect of the Leishman's stain. The film is permanent and can be put away without necessarily mounting it under a cover-glass.

A film stained with Leishman's stain only, and showing marked polychromasia, will, when stained by the cresyl-blue Leishman method, show with few exceptions reticulocytes in place of the polychromatophilia. This probably indicates that the ordinary polychromasia is merely the ineffective staining of reticulocytes by Leishman's method.

SOUTH DEVON HOSPITAL. — Princess Mary on July 21st laid the foundation-stone of the new wing for extending the South and East Cornwall Hospital, and for providing accommodation for 60 additional patients and about 300 out-patients.

Reviews and Notices of Books.

How to Start in General Practice.

Being Practical Advice for the Newly Qualified. By Isaac Briggs, M.R.C.S., L.R.C.P. London: John Murray. 1928. Pp. 158. 6s.

So long as a man's outlook in medical practice is not dominated by ideas of profit and loss, he will be all the better for some acquaintance with the principles that underly them. As the author of this excellent book says in the preface, the ethical side of practice is always being impressed upon the intending practitioner, often to the exclusion of business and practical considerations. If a young doctor takes up general practice with a limited capital and no business knowledge of how to use it, he is likely to have experiences that may sour his future outlook, and in any case, is at an unfair disadvantage compared with colleagues who have studied medical practice from a business point of view.

Remembering, then, that ethical considerations come first and will chiefly influence his future happiness, no intending practitioner can be the worse for a knowledge of what Dr. Briggs has to say. The book tells him how to register, which defence societies to join, and what to read, mentioning especially "The Conduct of Medical Practice," published by The Lancet. He learns how to purchase a practice and is wisely told to guard against the temptation of dispensing with legal aid in doing so. "Amateur law or accountancy are far more expensive hobbies than amateur physic," says Dr. Briggs, and "if a vendor declines an accountant's investigation . . . bid him a courteous adieu." Advice is given as to courses open to those not possessing sufficient purchasing capital, and some useful notes about building societies, architects' fees, and contracts are added. Chapters follow on furnishing of a doctor's house and on renting rooms and garages. Another deals in great detail with methods of book-keeping.

The latter half of the book concerns itself with equipment, instruments, practice bags and, useful to those who intend dispensing, suggestions for stock drugs, lists of prescriptions, and other useful information culled from long experience in general practice.

It has been our melancholy experience to comment on certain American books, in which the authors have called loudly for permission for doctors to enter the field of business competition on equality with all men, to advertise their specialties to all the world, and generally to break through what they consider hampering obligations of old-fashioned and unbusiness-like methods. Dr. Briggs's book is based upon no such false position; nothing in it is in any way incompatible with medical practice as a vocation, and we commend it to those who have a high sense of the dignity of their profession but an unnecessary ignorance of business methods.

Practical Serology.

Third edition (1926). By Luigi Vigano, Professor in the Royal University of Milan; Assistant Director of the Serotherapeutic Institute at Milan. Translated by E. Mary Heffer. Edited by C. G. L. Wolf, Addenbrooke's Hospital, Cambridge. W. Heffer and Sons, Ltd. 1928. Pp. 221. 12s. 6d.

This little book, which has run through three editions, in Italy covers a field not touched by any book of its size in English. In the course of just over 200 pages a large number of serological methods are described. The accounts are necessarily brief and partly, owing to translation, are not always quite clear. The chapter devoted to the care, nourishment, and breeding habits of laboratory animals contains much useful information. Workers in this country will be disappointed with the chapter on agglutination which gives no reference to G. Dreyer's (or any other) water-bath method for performing the test. The statement that inoculation agglutinins generally disappear from the body three or four months after the inoculation, and the suggestion that primary agglutinins can be easily distinguished from secondary ones by the height of the agglutinin titre will not meet with general agreement. The association of the Weil-Felix reaction with the diagnosis of cerebro-spinal meningitis is an error; the test gives no help in this connexion. Four methods of performing the Wassermann reaction are set out; a method for obtaining quantitative results by keeping the amount of antigen and complement constant and using various dilutions of the patient's serum might have been included with advantage. No less than 18 methods are described for the diagnosis of syphilis by means of the flocculation reaction, but there is no guidance offered as to their respective values.

The book gives an interesting insight into the serological methods employed in Italy.

Sex Problems in India.

By Prof. N. S. Phadke, Professor of Mental Philosophy, Rajaram College, Kolhapur. Bombay: D. B. Taraporevala, Sons and Co. 1927. Pp. 348. R.6.

This book is an exposition of eugenics in relation to the social conditions and customs of India. It is intended for Indian readers. The author writes with knowledge of his subject, which he is at pains to present, not as a new-fangled Western idea, but as one which, though emanating from the West, is supported in its essential points by numerous texts from Hindu Scripture. Thus Prof. Phadke's clear enunciation of the sociological and moral indications for eugenics in India is heavily supplemented by quotations from Sutras and Shastras, the relevance of which will be better understood by the Hindu than by the European reader. It is interesting to note that, while an advocate of Swaraj, Prof. Phadke holds that the achievement of self-government by Indians will not necessarily result in their immediate and automatic racial improvement. "To hope that a race of fit Indians will automatically arise the moment we are politically free is as ridiculous as to hope that a rich harvest will automatically be yielded when the rains come, even though we may sit with folded hands, taking no trouble of sowing."

Prof. Phadke's book is to be recommended to all Indians interested in the racial future of their country, and especially to the rising generation of Indian medical men.

Filterable Viruses.

Edited by Thomas M. Rivers. London: Baillière, Tindall and Cox. 1928. Pp. 428. 34s.

The recognition that many diseases may be due to agents which pass through bacteriological filters and are beyond the limits of ordinary microscopic vision has opened a fascinating field for research, as interesting as it is difficult. There is already a considerable literature on the subject, but it is scattered in various journals, and the treatment of virus diseases in the text-books is brief and uncritical. This volume, therefore, is a timely contribution to pathological literature. Published under the general editorship of Dr. Thomas M. Rivers, it consists of ten chapters, each dealing with a different aspect of the subject, and each written by a worker who is a recognised expert in his particular branch. The first chapter by the editor on some general aspects of filterable viruses is one of the best in the book. It is a sane and balanced presentation of the subject and is enriched by references to 539 articles. Other chapters deal with Filters and Filtration, by Dr. Stuart Mudd; Tissue Cultures in the Study of Viruses, by Dr. A. Carrel; Intracellular Pathology in Virus Diseases, by Dr. Edmund V. Cowdry; Virus Diseases of Man (Poliomyelitis), by Dr. Harold L. Amoss; Virus Diseases of Mammals (Foot and Mouth Disease and Vesicular Stomatitis), by Dr. Peter K. Olitsky; Virus Diseases of Fowls (Contagious Epithelioma), by Dr. Ernest Goodpasture; Virus Diseases of Insects (Sacbrood and Polyhedral Diseases) by Dr. Rudolf W. Glaser; Virus Diseases of Plants, by Dr. Louis D. Kunkel; and Virus Diseases of Bacteria (Bacteriophagy), by Dr. Jacques J.

Bronfenbrenner. Each chapter is accompanied by a bibliography, and there is an adequate index.

It will be noticed that only certain selected examples of virus diseases are discussed, others are mentioned in passing or are omitted altogether. This deliberate selection permits of a more general survey than would have been possible had a greater mass of detail been included in each section. The articles are not all of equal merit or equally judicial, but they are all well informed. Each author has had a free hand and if, therefore, points of disagreement are discovered in different chapters, this is merely an indication of the fluid state of our present knowledge of the subject. The volumes as a whole will be welcomed by all who are interested in virus diseases, and may be recommended as a reliable introduction to this important branch of pathology.

THE LOCOMOTIVE-GOD.

By WILLIAM ELLERY LEONARD. London: Chapman and Hall. 1927. Pp. 434. 18*s*.

Mr. Leonard, a professor in an American University, offers the world this autobiography of an agarophobe. After the onset of the symptom in adult life, he recovered a series of forgotten memories which, he reasonably believes, have a close relation to the phobia. This work of recovery, which occupied seven years, was carried on chiefly by crystal-gazing, and to the obvious objection that the memories were fantasies, he answers by detailed confirmation from outside sources. The "Locomotive-God" was a terrifying visualisation derived from frights in early childhood, and his description of the process of gradual resolution into its elements conforms to what is known of such phenomena and stamps the record as genuine. He wrongly applies the term psycho-analysis to his process of recall, whilst protesting frequently that Freudian elements are absent, but psycho-analysts will perhaps trace the evidence for these elements in such incidents as the compulsion upon his parents to sleep near him with the intervening doors open—a typical infantile situation which may call out for real analysis. The tyranny of the neurosis as it enforced itself upon relatives is adequately described, but unrecognised, by the author; the phobia led to their constant attendance, and in the tangle of cause and effect the regressive infantile need for their presence may well have been a stimulant of the phobia. Indeed, the psycho-pathologist will find in the story many situations the significance of which is lost to the writer, though this in no way detracts from the instructiveness of this human document. His phobia still persists, and its persistence will be regarded by some as proof that the genesis of the Locomotive-God is not fully revealed. The book has much value; what that value is depends upon the reader. The psychopathologist will doubtless find in it material to confirm his own special theories; the practitioner who tends to despise the neurotic will learn from it the suffering that the latter can undergo; the emotionally well balanced will gain insight into the emotions of the poorly balanced; but the poorly balanced themselves had better avoid it.

JOURNALS.

THE JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXXI., No. 3. July, 1928. Pp. 445–596.—The Fate of Colloidal Iron administered Intravenously, by C. J. Polson (Manchester). A combination of chemical and histological examinations shows that the iron accumulates chiefly in the lungs (where it forms emboli in the vessels) and in the liver and spleen (where it is ingested by endothelial cells).—Virus III., with special reference to the Response of Immunised Rabbits to Reinoculation, by C. H. Andrewes (London). The virus was found by making serial testicular inoculations. Partly immunised (sensitised) animals give a larger local response on reinoculation than either normal or immune animals. The virus survives longer in refractory animals such as the guinea-pig than in actively immunised rabbits.—Normoblast, Reticulocyte, Erythrocyte, by F. C. O. Valentine (London). The reticulum of reticulocytes originally forms the connexion between nucleus and cytoplasm. —The Gram-negative Cocci of the Nasopharynx, by S. P. Wilson (Manchester). Apart from the meningococcus and *M. catarrhalis*, a number of ill-defined forms can be distinguished, the systematic position of which is very dubious.—Cerebral Gliomata, by E. A. Carmichael (London). On the whole, the classification of Bailey and Cushing is substantiated; but it is too complicated and the author prefers a simple division into relatively malignant spongioblastic growths and relatively benign astroblastic tumours.—Continued Fever due to *B. alkalescens*, by J. Smith and A. N. Fraser (Aberdeen). The first recorded infection by this organism: a septicæmia arising after childbirth.—The Temperature of Normal Rabbits, by P. Lazarus-Barlow (London). A valuable series of four-hourly readings on eight rabbits for 23 days. The mean is 102·7° F., with a small but regular diurnal cycle. A deviation of 2°F is significant of something abnormal.—Multiple Zones in the Serum Precipitation Reaction, by N. E. Goldsworthy (Cambridge). Mixtures of horse-serum and the corresponding rabbit antiserum may show several foci of precipitation on either side of the optimal mixture which gives the largest reaction.—The Part Played by Alcohol in the Wassermann Reaction, by C. H. Browning and E. M. Dunlop (Glasgow).—Thrombo-angeitis Obliterans, by R. O. Girdwood (Aberdeen). A man of 29. The fibrosis which mats together arteries, veins, and nerves was a striking feature.—The Gastro-intestinal Flora in Pernicious Anæmia, by L. S. P. Davidson (Edinburgh). There is a great numerical increase in *B. coli*, streptococci, and *B. welchii*, both in the stomach and duodenum and in the fæces. No evidence was obtained that the varieties of these organisms present differed from these found in normal persons.—Tuberculosis in a Dog, due to Infection with a Bovine Virus, by G. S. Wilson and R. Lovell (London). A mesenteric gland in a puppy.—Gummata of the Aorta with Rupture into the Pericardium, by R. J. Wright-Smith (Melbourne).—Gumma of the Heart Wall in an Infant of Six Weeks, by J. W. S. Blacklock and J. A. W. McCluskie (Glasgow). —*Bacillus enteritidis* Infection in Wild Rats, by J. C. Kerrin (Aberdeen). Gaertner's bacillus was found in 11 of 100 wild rats in Aberdeen.—A Simple Apparatus for Filtering Small Amounts of Fluid, by D. L. Johnston (Aberdeen). A piece of Seitz filter is supported half way up a centrifuge tube.—The Cultivation of an Organism from the Spleen in a Case of Banti's Disease, by A. A. F. Peel (Glasgow). A pleomorphic fungus.

THE LECTURES ON CANCER given as part of a post-graduate course held locally in the winter of 1926–27 have been published in book form by the Manchester Committee on Cancer. The volume includes also a special report on the results of operation in cases of cancer of the breast, compiled by Dr. John Murray and Dr. Gretta Wardle. The 14 lectures deal with general problems of incidence, causation, and treatment, and include detailed clinical studies of cancer affecting various organs of the body. The investigation on operative results concerned 521 cases of cancer of the breast, of which 375 had been proved histologically to be malignant. They are divided into five classes, according to the stage of the disease at the time of operation. The most interesting records are those of the 183 patients operated on in the period 1910–13. In this group, 40 patients of all classes were alive 10 years after operation, while of the 29 patients placed in class one (early cases) 21 were alive 10 years after operation. It is interesting to note that one or two cases survived 12–15 years after operation and then died of a recurrent cancer. A small proportion of the cases still alive (7 per cent. of the total number of living cases) have a recurrence.

This book of 150 pages is apparently issued free but the insertion of a preliminary report from the Scientific Research Subcommittee reminds readers of the financial needs of the fund being raised for cancer research in Lancashire, Cheshire, and North Wales.

THE LANCET.

LONDON: SATURDAY, JULY 28, 1928.

CANCER: VIRUS OR ENZYME?

ONE of the first sessions of the International Cancer Conference, which concluded a week ago, was given up—as was indeed proper and logical—to a discussion on the ætiology of cancer. This discussion disclosed the significant fact that wide differences of opinion concerning the origin of malignancy still exist among those who have devoted a life-time to the study of the problem. If we revert to-day to this subject it is because two of the papers read by prominent pathologists in this country and the United States of America appear somehow to have impressed the imagination of the daily press, with the result that the public has again been fed with sensational statements and demands to know what it is all about. If we turn to the official documents submitted by Prof. A. LEITCH and Dr. J. B. MURPHY to the conference—and this is the only evidence which we can consider—we find little justification for this outburst in the press. Indeed, Dr. MURPHY'S paper is mainly concerned with the discussion of a highly technical point—namely, whether the "agent" which produced the filterable tumours of the fowl is a "virus" or an "enzyme." We do not know what an "enzyme" is, we do not know what a "virus" is; they are little more than abstract conceptions made to account for certain biological phenomena. We recognise their presence by the results which they produce. The essential problem presented by the filterable tumour of the fowl is not whether the causative "agent" is a virus or an enzyme, but its remarkable specificity of action, which enables it to reproduce exactly the same type of tumour as that from which the "agent" was obtained. The bulk of Dr. MURPHY'S paper is concerned with evidence which, in his opinion, demonstrates that the causative agent is an enzyme. This evidence consists in having prepared from an active filtrate of a fowl tumour by repeated precipitation a substance which, if injected, produces again the typical tumour. In the concluding paragraph of his paper Dr. MURPHY states:—

> It is hardly conceivable that the active fraction which I have thus succeeded in obtaining, a substance purified by repeated precipitations, could carry with it through all these manipulations any living organisms or virus. To me the enzyme-like nature of the principle seems to have been conclusively established, but there may be some who would still maintain that, in spite of all, the possibility of a virus is not excluded. The final and crucial proof must be the production of the same substance from materials which certainly do not contain a virus. This has been accomplished. By similar technical procedures, I have isolated from such normal tissues as the testicles of normal fowls, not in contact with any tumour-bearing animals, a similar agent with which I have produced the typical tumour, transplantable in over 90 per cent. of fowls.

There Dr. MURPHY'S paper ends, and the reader is left breathless. It would indeed be a remarkable discovery it if were possible to extract *with a considerable degree of regularity* from the normal testes of normal fowl a chemical substance which, when injected into another normal fowl, would produce *with a considerable degree of regularity* a malignant new growth. It would not in itself solve the problem of malignancy, but would rather present us with a phenomenon of far-reaching significance in its general biological aspects. The perplexing thing is that an observer of Dr. MURPHY'S acuity of vision does not comment upon this aspect of his work, but is content to use this observation merely as an argument for the enzymic nature of the active tumour-producing principle—a matter of secondary importance. From the reports before us it seems, however, to be Prof. LEITCH rather than Dr. MURPHY who makes the wider claims for this observation. Prof. LEITCH himself has reported that on one occasion he obtained a typical "Rous sarcoma" by the injection into a fowl of a normal fowl pancreas, but that on repetition in numerous experiments he has failed to obtained this result. He has also pointed out very truly that a positive result which can only be obtained once in a large number of negative experiments must necessarily be interpreted quite differently from a positive result which can be obtained with a considerable degree of regularity. A single positive result might conceivably be used as an argument against the virus nature of the agent, although it is perhaps not as conclusive sa Prof. LEITCH and Dr. MURPHY seem to think; but until we know the percentage of successes which result from the injection of the substance isolated by Dr. MURPHY into a number of fowls, and the percentage of successes with which an active preparation can be obtained from the testis of a number of normal fowls, it is impossible to assess the *general* value of his observation. On these points Dr. MURPHY is silent, presumably because he has not done a sufficient number of experiments to justify an expression of opinion.

A MEDICO-LEGAL INSTITUTE FOR LONDON.

LONDON has no medico-legal institute, and it must be one of a few of the considerable towns in the world which is in that predicament. The ninth series of Methods and Problems of Medical Education, issued lately by the Rockefeller Foundation, gives illustrative descriptions of 24 such institutes, mostly in Europe, with accounts of their methods, together with several essays on germane topics and proposals for progress. They are for the most part substantial departments, generally attached to universities, with large buildings and staffed on much the same scale as a good department of anatomy or physiology. The two British establishments which are described (those at Edinburgh and Glasgow) are arranged on a more modest scale. A study of the whole volume cannot fail to raise the question, Why has London nothing of the kind?

The precise functions which a medico-legal institute discharges vary somewhat from place to place, but their main business is the study of violence, murder, and sudden death, and generally to deal with any pathological matters which arise in connexion with police work. The problems arising out of unexpected death are often very complex, and in some cases—e.g., murder—involve issues which are even more important than accurate death certification. Their study is a specialty, and like other specialties it demands a whole-time devotion if anything beyond a very ordinary standard is to be reached and if any fresh progress is to be made. The nearest doctor and

pathologist, though well trained along ordinary lines, may well not be competent to elucidate all the delicate problems which legal medicine presents, and an institute staffed with experienced specialists to provide the necessary special training and knowledge. In London at the present time there is one morbid anatomist who has made himself a medico-legal expert, the bulk of medico-legal post-mortems are made by persons who may not be competent always to meet the difficult points, and there is no place where a man may get the necessary experience. What is needed so badly is a large establishment to which all the coroners' and police work will come—post-mortems, toxicology, sexual offences and the rest—and staffed with men who make it their life's work to study and know and practise the business which they have in hand. Whether it should be a university department attached to one of the larger medical schools, or in the Home Office, or under the chief medical officer of the L.C.C. is not now under discussion. The detection of crime is important enough, and the history of poisoning shows how deterrent has been the fact that the wits of those who find it out have been (as far as we know) generally a little better than the wits of those who do it. There may be a good deal of unsuspected poisoning going on, but as a rule those who meditate its practice seem to be afraid of being found out. An effective institute would promote this wholesome apprehension. But it is equally necessary that the causes of deaths which are unexpected and on the surface inexplicable should be made out as accurately as possible. The man who drops dead in the street is one of the most interesting and instructive objects for the morbid anatomist; he raises a special series of problems which are likely to be solved the sooner if he falls into the hands of those who have made a particular study of him. The frequency with which fibrous hearts are reported as fatty hearts by incompetent examiners illustrates the errors which, almost necessarily, follow the present haphazard arrangements.

Another point of importance has been emphasised by recent changes in coroners' practice. Our knowledge of morbid anatomy rests ultimately on our knowledge of normal anatomy. This we have few chances of studying and our knowledge is correspondingly meagre. Human life in western Europe is now long, and medicine is largely concerned with bodies which have passed their prime and may be degenerated. No one knows the extent of this degeneration, nor what would be found if one dissected carefully the first hundred apparently healthy persons met walking along a London street. Our only chances of getting this essential information are provided by deaths from violence, and it is as necessary that healthy bodies should be examined by the pathologists as that anatomists should have an adequate supply of material. Even with motor-cars and more than 5000 deaths per annum from road accidents, the experience of any one pathologist of violent deaths is very limited, and great advantages would accrue if they could be concentrated into a few specialised hands. Lately, to save expense, coroners have recalled the fact that their business is to find out the cause of death, and have failed to have post-mortem examinations made where that is obvious. In so doing they defeat their object more often than they may think; the real cause of death in a man pulped by a lorry may not be as obvious as it seems, and a surprising number of such fatalities show on dissection some substantial disease which is no doubt an important contributory reason why the accident has happened. But, this consideration apart, it should be frankly recognised that no opportunities of doing post-mortems on normal people should be neglected in the cause of medical science. An institute would do away with the difficulty about fees, and, one way and another, a medico-legal institute for London is a necessity which is long overdue. We are glad to see that the London County Council has promised to look into the matter and we hope its inquiry will be fruitful.

THE MENACE OF THE CLINIC.

THE medico-political issues of to-day give little opportunity for impassioned affirmations and ferocious gestures. The Representative Body of the British Medical Association, which considers these subjects for four whole days every summer, is denied the pleasures of oratory now by the conciliatory efforts of its advisers and now by the complicated nature of their proposals. But there are one or two subjects which still make the blood run faster through medical veins, and the assembly was quickened into liveliness last Saturday by picking up the scent of a possible menace to private practice. At first sight the quarry seemed unworthy of the chase, besides having the best intentions; but the meeting was unimpressed by its innocent and affable appearance, doubtless remembering that similar qualities could be claimed for the first rabbits which entered Australia. The fact that the ladies of Chelsea had politely sought the Association's advice about the best way to administer their clinic for middle-class babies or "paying centre for infant hygiene" in no way softened the hearts of those who, believing that the proper person to advise a middle-class baby about his bath, clothes, diet, and general upbringing was the practitioner who would attend him when he was ill, could not conceive the possibility that that practitioner might welcome in many circumstances a reinforcement in his task. Whilst everyone admitted that for poor people the infant welfare clinic was the best available source of information, it was felt that mothers who were prepared to pay five guineas a year for help with the rearing of their offspring would be much better advised to consult their own doctor—not only from his point of view, but from their own. The spokesman of the Council, Dr. J. W. BONE, said that it was no good trying to stop the setting-up of such clinics, and it would therefore be best to guide them along the best lines. He recommended, therefore, that the Association should define a policy that any further establishment of special paying centres should be for the purpose of education and not for treatment; and that mothers attending them should not do so without the knowledge of the family medical attendant. It may be mentioned that those responsible for the clinic, whose institution started the debate, have laid down exactly this injunction (see p. 210). Mr. BISHOP HARMAN, a member of the Council who supported these proposals, saw no objection to children attending such centres while they were in health. Dr. L. W. BATTEN ridiculed the idea of drawing a distinction between babies well enough to go to the clinic and those ill enough to see their doctor. Where, he asked, does hygiene end and treatment begin? Is regulation of diet a form of treatment, and, if not, how much weight must an infant lose before it is to be classified as sick and denied further advice at its clinic.

The steady constriction of the field of private practice is viewed by all with very natural alarm, and on Monday Dr. E. E. BRIERLEY and Dr. FORBES

xpressed a general opinion when they urged imme-iate consideration of the steps to be taken to stop ie enclosure of more and more of this field by medical fficers of health, by voluntary and rate-supported ospita's, and by clinics. But for the moment we ish chiefly to draw attention to the arguments, set it in the discussion, which bear on the value of inics to the middle-class public, not forgetting ther their menace or their value to busy practi-oners. Dr. CHRISTINE MURRELL made a good oint when she said that the clinic medical officer as the advantage of having at his hand all the cilities afforded by ancillary organisations, but ere she must have been thinking of welfare entres for poor people who need the help of such rganisations and not of women whose means allow iem to subscribe five guineas a year for advice on ie problems of infancy. Dr. E. R. FOTHERGILL sisted that the clinic must be comparatively norant of home conditions, but he also was thinking terms of those whose environment may present the ief elements of risk to health, and not of those whose mily circumstances are actually those of the medical fficer. The pace of work may, however, prevent ie latter from getting the information he ought have, and, in the words of another speaker, the ght of 20 or 30 similar babies in an afternoon is arrowing to the clinical soul, and advice may tend to ecome stereotyped unless the adviser is doing a eat deal of outside practice as well. The home, id Dr. FOTHERGILL, is where a mother or a child ould be treated, and anything that takes her out the home to consult a strange doctor cannot be in r true interests. But obviously this must depend the quality of the assistance received from the mily adviser, and also on the amount of time that has at his disposal and on his personal attitude wards pædiatrics. Many practitioners are definitely erse from the task described by Mr. BISHOP ARMAN as sitting down day after day in the me and giving advice about the washing, feeding, othing, entertainment, and education of infants. me of them regard pædiatrics as the most portant and interesting part of general prac-ce, but others believe that everything of importance out infant feeding can be written on the back a postcard. While Dr. BATTEN is right in saying at it is a low view of the family doctor to imagine at he only wants to tinker with the baby when he as become sick, the fact remains that those who e keen on the care of infants, and therefore fitted advise upon them, need not in the long run fear mpetition. To some the word "clinic" has become fetish and there is an impression that such places n offer something better than an individual medical an. This is a mistaken view; the fact that the inic tends to send practice to specialists rather an to the family practitioner is a menace, but one hich under the rules of the Chelsea Babies Club ineffective, the coöperation of the practitioner being quired in the future treatment. Dr. BONE said the st word in the matter when he pointed out that e public will certainly be the judges. The resolution ported on p. 195, whilst expressing comprehensible approval of paying centres for infant hygiene, will ever be effective if the public believes that they lfil a genuine want.

Mr. TURNER asked the meeting where the establish-ent of clinics was going to stop. If we had paying inics for infants why not clinics for adolescents, thers, mothers, old men, and maidens? He renuously objected to the private practitioner ing made a mere funnel through which patients were poured to some specialist destination; he did not want to be "the whetstone that renders the iron sharp, being itself absolved from the duty of cutting." We agree with him that the family doctor should and must be the principal agent in medical work in this country; but the public has a right to skilled advice and treatment, and it is becoming harder and harder to combine the balanced outlook of the general practitioner with a high grade of knowledge of the more special branches of practice. Dr. H. B. BRACKENBURY was able to tell the meeting on Monday that the General Medical Council is satisfied with the teaching of antenatal examination in our medical schools, but this does not mean that the newly qualified student can offer an opinion as good as that obtainable from an experienced obstetrician—whether at a clinic or elsewhere. Paying clinics will be popular as long as they provide advice that the public feel they have hitherto failed to obtain. But all clinics have inherent disadvantages, and they will cease to be any menace to the family doctor as soon as there are enough practitioners willing and able to undertake the kind of work they do.

Annotations.

"Ne quid nimis."

PAY-BED PATIENTS.

THE Report of the Special Committee, the Pay Beds Committee, of King Edward's Hospital Fund for London, was published last week, its wide reference being "to inquire and report upon the question of hospital accommodation in London for persons prepared to pay more than ordinary voluntary hospital patients." The Special Committee consisted of the following five persons, the late Lord Hambleden, Sir John Rose Bradford, Sir Bernard Mallet, Mr. V. Warren Low, and Prof. Winifred Cullis, but from the unanimous and valuable report, Lord Hambleden's signature is sadly missing.

The Report is largely founded on the replies received to a searching questionaire addressed to those hospitals which provide for pay-bed patients within the area of operations of the King's Fund—namely, that greater London which is included in a circle whose radius is 11 miles from St. Paul's Cathedral. The evidence thus obtained from 80 hospitals, general and special, is summarised in an appendix, from which it may be gathered that the sum of pay-beds in these institutions is 1055, of which rather more than half—namely, 522—are to be found in the special hospitals. The figures will, we think, be a surprise to many who have been unaware how far the pay-bed system had increased of late, but the analysis shows great diversity of practice. There is no uniformity about the fees paid, nor do the charges always cover the same services, nor are the arrangements, speaking generally, comparable; but it is perfectly clear that the demand of the public for these beds under one set of conditions or another is quite unsatisfied, and many witnesses testified to the Committee that a far larger provision of pay-beds is necessary as a valuable adjunct to all forms of practice. A classification of those who would be suitable for admission to pay-beds will be found in the Report, and all must recognise that the time when hospitals were only called upon to provide comparatively simple treatment for the necessitous poor is gone by. The Report says that "with the development of expensive methods of treatment in diagnosis a large number of the middle and professional classes are now unable to pay the full cost of services, some of which are often difficult to obtain outside hospitals." This is a moderate statement of a case which need not be set out at length in these columns, so often have we pointed to the fact that while the rich can buy

and the poor can be supplied with the best medical and (especially) surgical skill in times of emergency, the middle-class group of the community enjoys no such good fortune.

The general message of the Report is that a shortage of pay-beds exists and that it can be best met by a steady extension of existing hospitals or provision of separate hospitals, in both cases a scale of inclusive fees being arranged in proportion to the accommodation required. These recommendations, it will be seen, postulate the expiry of a good deal of time before the present situation can be met, though a mutual insurance scheme is suggested as a ready method of beginning the work. As might be expected from the origin of the special committee, the Report indicates where provision of pay-beds under proper administration can be turned into a source of legitimate revenue for the voluntary hospitals thus strengthening them in their charitable work.

SCIENTIFIC SOCIETIES AND INCOME-TAX.

SCIENTIFIC and professional societies, dependent for their financial existence upon the fluctuating subscriptions of their members or upon past savings, are keenly alive to the liability of their funds to income-tax. Not long ago the funds of the General Medical Council were refused exemption,[1] and now two recent revenue decisions, delivered upon the same lines, have again gone in favour of the Crown. It is high time that the many societies and bodies of this nature took counsel together and made some concerted effort to obtain protection for funds mainly devoted to professional education and scientific research. It is true that these funds are often in part concerned with the organisation of a profession and the qualifications and examination of its would-be members. But it is also true that the country, as a whole, obtains benefit from the creation and maintenance of high professional standards. There is probably no general desire that any funds relating to any form of education should be taxed; there was never a louder call than at this moment for the mobilisation of scientific knowledge in the interests of depressed industries; the yield, moreover, from the income-tax levied on professional and scientific associations must be comparatively trifling.

In order to escape liability for income-tax, a society must be "charitable" within the meaning of the Income-tax Acts and a certain statute of Elizabeth. Legally the advancement of learning is a charitable object, but legally there is no exemption unless the society's funds are devoted not only to charitable objects but to charitable objects only. In respect of the Geologists' Association (one of the two bodies upon whose liability Mr. Justice Rowlatt has lately passed judgment), the Commissioners said that the main function was the combination of members for scientific purposes and mutual improvement and the giving and receiving of instruction among themselves. Naturally these studies, pursued by the members in coöperation, tend to the increase of knowledge and indirectly to the promotion of education generally as well as other objects of public utility. But, while admitting this element of public benefit, the Commissioners nevertheless held that the Association was not a body established for charitable purposes only. They therefore disallowed the claim for exemption, and on appeal Mr. Justice Rowlatt has upheld them. He says they might have decided either way upon the facts, but he declines to say they had no material for deciding in the way they did. He interprets their decision as meaning that the Geologists' Association has for its main object merely instruction inter se: this object has a reaction upon the advancement of learning at large, but this element is not strong enough to take the Association out of the category of a purely private society of private individuals. The other recent case (the appeal of the Midland Counties Institution of Engineers), Mr. Justice Rowlatt thought even clearer. He quoted with approval Lord Watson's phrase in the Civil Engineers' case (decided some years ago), to the effect that exemption depends upon the intrinsic character of the objects which a society promotes, and not upon the scope of the benefits which may result from its transaction. When one comes to consider, added Mr. Justice Rowlatt, the inevitable issue whether the purposes of a society are charitable and charitable only, the question which emerges is this: "Is there so much personal benefit to the members, intellectual or professional, as to be incapable of being disregarded? It may be a substantial object of the society that its funds should benefit the members intellectually or professionally. This use of the funds will have the further object of benefiting the public by calling greater knowledge into existence. But, if the two objects are there, then the funds are not exclusively devoted to the one object. In both these recent cases the Commissioners, whose duty it is to find the facts, have held that both the two objects were present. As the like result may be expected in the case of all similar bodies, and as the refund of income-tax is now being withheld, it is not surprising that the subject is attracting attention in the daily press. Why, it is asked, should exemption from taxation be confined merely to philanthropic bodies? Why should there be no relief for the institutions which represent applied science? These institutions do not devote their funds to the personal enrichment of their members. They contribute to the development of national education, health, and industry. It is probably impossible for them to separate their funds and functions in such a way as to preserve from tax that side of their activities which is exclusively "charitable," while admitting liability in respect of those other activities which are concerned with the non-charitable element of benefit to members. The time has surely arrived for abandoning the dependence of our income-tax law upon the anachronistic definition of charities in the legislation of a queen who reigned happily in an age when income-tax was yet unknown. Parliament should be pressed to frame some fresh and simple provision for the relief of scientific education and research.

[1] THE LANCET, 1928, i., 715.

VARIATIONS IN THE IODINE AND THYROXIN CONTENT OF THE THYROID GLAND.

IT has been shown by many investigators that the physiological effects produced by desiccated thyroid can be brought about by the injection of pure crystalline thyroxin. The relation of the activity of the thyroid to the iodine compounds which occur in the gland is not, however, yet clear. A study of the effect of the seasonal variations and the influence of geographic distribution on these iodine compounds has recently been undertaken by Prof. E. C. Kendall, of Rochester, Minnesota, who communicated his results at a meeting of the American Association of Physicians held at Washington last May. The importance of considering the iodine compounds other than thyroxin became apparent in the course of the investigation, for the purpose of which 100 lb. of fresh hog thyroid glands have been analysed during the first few days of each month for 20 months. Various samples of thyroid material from different parts of the United States and England have also been analysed. The seasonal variation in the total iodine, already observed by other workers, has been confirmed. In January and February 100 lb. of thyroid may contain 14 g. of iodine; in July and August as much as 40 g. This applies to glands removed from animals in the Middle West. The seasonal variation was not observed in the material obtained from England and Scotland. The amount of thyroxin in these glands has also been determined. The importance of considering those iodine-containing compounds which are not thyroxin is shown by the fact that in the summer, when the iodine is at its highest, the percentage of total iodine in the form of

yroxin is not more than 10 per cent., and in the nter it may drop to less than 5 per cent. Thus om 90 to 95 per cent. of the total iodine in the gland in some form other than thyroxin. The amount thyroxin present appears also to be influenced by other factor. Many samples examined of desic-ted thyroid had a high content of iodine which was ysiologically very active, but from which no yroxin could be isolated. The physiological tivity was not destroyed by boiling with acid, but as destroyed by alkali. This suggested that some fference might be produced in thyroid material by rmitting the fresh thyroid glands to stand, and as result of experiments it was found that some emical change can occur in thyroxin not only nen the glands are desiccated, but when they are owed to stand after being freshly ground. The yroxin is chemically altered and cannot be isolated, t it is still physiologically active. Further experi-ents appeared to show that another iodine compound present in the gland which is destroyed with alkali, stable at least to some degree to acid, and has the ysiological activity of thyroxin. Prof. Kendall ggests that thyroxin may be an intermediate rm of the active constituent, and that it must be ered before it can become physiologically active. ter the alteration has occurred it manifests the pical physiological activity of desiccated thyroid, t is too unstable to be isolated. This alteration nnot consist merely in a detachment of the thyroxin m the protein, or the thyroxin could be recovered. cording to Prof. Kendall, it is likely to be some more ep-seated modification, possibly the attachment of second hydroxyl group to the thyroxin.

THE RISKS OF SPRAYING PAINT OR LACQUER.

THE whole of the June issue of the *Journal of dustrial Hygiene* is devoted to hazards connected th applying lacquers or paints by spray. This ethod is rapidly replacing the painting of surfaces hand on account of the enhanced economy of rk and evenness of application. It is associated th risks for the painter arising from the materials ed; three substances in particular are concerned—nzene used in lacquers, lead compounds in paints, d silica in vitreous enamels. Two valuable quiries have been made, one by the Pennsylvania partment of Labour and Industry, and the other the American National Safety Council. A mass of formation so acquired is brought together and re presented in readable form. Benzene vapour air was determined by passing a sample through tration acids to form dinitrobenzene; the method described. Two hundred and ninety-one lacquer rayers exposed to varying concentrations of benzene pour were examined, and also 266 sprayers of other aterials. First, a stimulation of all blood-making gans, but without increased hæmoglobin, was tected, followed by the usual benzol picture of lative lymphocytosis, but absolute leucopenia, th progressive decrease in red cells. Protection only to be obtained by limiting the amount of nzol used in lacquers to 0·5 per cent. Lead absorp-n from sprayed paint was detected among 253 rkers. It is recommended that the practice of raying paints or lacquers containing over 1 per nt. of lead be discontinued, or carried out only nen adequate air movement of 150 to 200 ft. per inute past the worker towards an exhaust duct is ovided. Indications were obtained of a definite icosis hazard from spraying vitreous enamels on metal sheets and castings preparatory to firing; sprayers of such enamels were X rayed, of whom per cent. showed definite silicosis and the other 17 r cent. suspicious indications. The need is stressed r routine medical examination of all workers nployed in spray coating with materials containing nzol or lead, or with silica in vitreous enamel atings.

CEREBRAL GLIOMATA.

IT has been a commonplace of pathological histology for many years that the series of tumours which arise from white fibrous connective tissue reproduce the various stages of development through which fibrocytes pass. At one end of the series is the round-celled sarcoma, in which the infant connective tissue cell persists permanently without undergoing any further differentiation; at the other end the fibroma, composed of the mature form. Two or three years ago Dr. P. Bailey and Prof. Harvey Cushing, of Harvard, pointed out that the group of tumours generally named "glioma" exhibit the same kind of series and between them produce all the embryonic phases through which the developing nervous system passes. They also pointed out that differences in structure were correlated with differences in clinical history; tumours which reproduce the adult or near adult stage differ from those of more embryonic structure in the same way, though not to the same degree, that fibromas differ from sarcomas. Morbid anatomy is generally pretty much the same all the world over, but it is interesting to have these ideas worked out on London tumours. This has been done by Dr. E. A. Carmichael working with 75 specimens accumulated at the National Hospital; his results are published in the current number of the *Journal of Pathology and Bacteriology*, a notice of which appears on p. 172. On the whole he fully confirms the results of Bailey and Cushing. At the same time, he points out that many tmuours are not composed wholly of one type of cell and that it may sometimes be almost impossible to assign a given tumour to any one of their types. It is, of course, equally true that many sarcomas are neither round-celled nor spindle-celled, but a mixture of the two, and to expect tumours of any kind to fall precisely into any series of pigeon-holes is to misconceive their nature and characteristics. The common tumours of the brain represent one stage or another of developing neuroglia, and Dr. Carmichael proposes that for practical purposes they should be divided into two main groups. The *spongioblastic* tumour is made up of a type of cell too embryonic to show any definite neuroglia fibrils; it is often degenerate and causes a reactionary gliosis in the surrounding normal tissue, and hence it is very obvious on naked-eye inspection; it occurs generally in people over 40, has a rapid clinical course, and causes focal signs before general pressure symptoms. The *astroblastic* tumour, on the other hand, is composed of a more adult type of cell with more or less developed fibrils; it is much less vascular, less prone to degeneration, causes no reactionary gliosis, and therefore looks very much like normal white matter and is quite ill-defined macroscopically; clinically, it occurs in rather younger people, has a longer course, usually causes pressure symptoms before focal signs, and is more amenable to surgery and radiation. For the present, at any rate, the refinements of cerebral tumours are for the specialists, but we seem to have here a plain advance in diagnosis and prognosis which should find its place in general medicine.

HOSPITAL COÖPERATION.

WHEN, as appears to be inevitable before long, the boards of guardians are abolished and their functions handed over to the county and town councils, the difficult problem of coöperation between the voluntary and the municipal hospitals, or poor-law infirmaries, will become urgent. Some form of coöperation there must be if waste and overlapping are to be prevented, and it is only reasonable to expect that the representatives of the voluntary institutions should be prepared with proposals likely to appeal to the practical common sense of the country. In Scotland the representatives of the voluntary hospitals have for some time past been in consultation on the subject, and have been asked by the Scottish secretary to form a committee and frame their suggestions. We have received a letter from

Lord Londonderry, the president; Sir Frederick Eley, the chairman of the Council; and Mr. R. Roy Wilson, M.P., the chairman of the Weekly Board of the Chelsea Hospital for Women, which has been issued to the press, both medical and lay, and in which they place before the London hospitals the importance of taking a similar course, on the ground that it might be of appreciable assistance to the Minister of Health, if these institutions became articulate. The advice is sound, and the sooner it is acted upon the better. It is highly desirable that the voluntary institutions should define their attitude and make their considered proposals without serious delay. The present Minister of Health is so well affected to them, and realises so clearly their value as part of the machinery of the national health, that he would undoubtedly welcome a clear and authoritative statement of what seems to them to be desirable and practicable in the way of utilising those poor-law hospitals which, although they every year become more efficient, are not invariably utilised to their full capacity. Two hospital services side by side are becoming something worse than an anomaly, and every effort ought now to be made to prevent the permanence of such a state of affairs, or the emergence of anything in the nature of a State service to the prejudice of a voluntary one.

The British Hospitals Association has here a great opportunity. It falls naturally to it to tap the opinions of the many distinguished experts who administer the London hospitals and perhaps to follow up that step by initiating a similar inquiry in the provinces. As the greatest hospital centre in Europe, the capital must needs come first, but outside its bounds there are many curative institutions, any one of which is individually almost, if not quite, as important as the biggest of the metropolitan hospitals. Such an inquiry as that suggested will not reveal unanimity, but there is little reason to doubt that it would provide the materials for a workable consensus. Advocates of the nationalisation or municipalisation of the entire hospital service know quite clearly what they want and are determined to press for it, notwithstanding its certain enormous cost and its very problematical advantages. They can best be met by a workmanlike scheme which will bring the rate-supported hospitals into friendly inter-relation with those which depend upon the voluntary support of the public. This should be easy under a scheme which would enable the former to be more completely utilised while stimulating the latter to systematise its finance. For constant and often passionate appeals lend much colour to the impression, so sedulously cultivated in some quarters, that the voluntary system is always standing precariously close to the abyss of bankruptcy. How far that impression is from the truth cannot be too clearly or too widely proclaimed.

HEREDITARY AURICULAR FISTULÆ.

SMALL congenital fistulæ opening on the pinna or in its immediate neighbourhood are not excessively rare, and seldom cause trouble to those whom they affect. They are usually referred either to incomplete fusion between the small tubercles which form the outer ear, not a very satisfactory hypothesis, or to a "branchiogenic" origin of an indefinite sort, an explanation which is definitely unsatisfactory—in fact, wrong. Even if the condition could be shown to be associated with some mal-development in the pharyngeal arches, the arches concerned do not correspond with the branchial arches of gill-bearing vertebrates; these are represented by the third and following arches in the higher embryos, whereas the first or, maybe, the second, are the only arches within whose regions the fistulæ in question can be put. If it is thought absolutely necessary that a piscine nomenclature should be used, the operculum could be dragged in less objectionably, for there is some reason for associating the pinna with the operculum, but none whatever for putting it among the gill-bearing structures. Prof. E. Starkenstein,[1] of Prague, has recently published a short account of specimens of this affection in his own family, of which he has the advantage of possessing records going back to the fourteenth century. The hereditary nature of the condition is clearly brought out in this unusual contribution, and is illustrated by two "trees" extending over three or four generations. Although the families are prolific enough, the numbers given are, of course, too small to permit of any valid conclusions bearing on the laws of heredity; but it can be seen that sex is of no deciding value, that every incidence is immediately preceded by incidence in one or both parents, and that the affection may be one-sided or bilateral. A photograph shows a left ear with a small opening on the front part of the down-turned anterior end of the helix, above the level of the crus helicis. About three-quarters of an inch in front of this and below it is a small swelling, marking thick secretion gathered in the blind end of the track, from which it can be squeezed. The situation described here does not appear to come into line with the normal development of the outer ear, but it is quite easy to imagine a slightly abnormal formation of the second and third auricular tubercles affording a foundation for it, and it would seem that the condition might be put into that very large class of malformations in which the developmental processes must have been off abnormal lines from their inception, and which cannot be harmonised with what occurs in normal formation. However this may be, Prof. Starkenstein offers to students of such matters a class of material which is rarely encountered, and which, in all probability, will well repay close study.

CARE OF THE HEALTH OF MERCHANT SEAMEN

FOR many years we have been calling the attention of our readers to the health, accommodation, and sanitary conditions of the men of the mercantile marine, and have been able more than once to report the advances that have been made on their behalf; but we feel that improvements are not proceeding rapidly enough and that sanitation is not progressing as fast at sea as on shore. There are two great impulses to improve sanitation, and neither is at its strongest at sea. Insanitary environments are brought to notice by a rise in death-rates or by the absence of fall in death-rates as rapidly in some as in other areas or trades; and as regards housing the death-rates that arrest attention may be, and often are, those of women and children, more susceptible and more continuously exposed to the evil conditions than are their menfolk. Such impetus to improvement does not help seamen, for the Board of Trade no longer publishes death-rates for them, while they live their lives and do their work apart, with no numerous attending crowd of women and children to act, like the white mice in submarines, as sensitive indicators of disaster. Another impulse to improvement is public opinion, and seamen derive little or nothing here. The visitors to areas of back-to-back houses are at once shocked, and, loudly contrasting what they see with the amenities of their own districts, awake locally the spirit of reform. But the ships are at sea or in dock, and in these regions, far from ordinary observation, escape public criticism; indeed if this were not so the accumulation of refuse on board ships in dock, of which port medical officers complain, could not go on being repeated, nor could the old hand-flush latrines of merchant ships have so long persisted after those accustomed to modern "sanitation" had made frequent visitations. Large passenger ships give the crews small cause for complaint; the trouble is in the tramp and coasting ships with small crews and, let it be admitted, small space. Nor must we forget that improvements must be at the expense of the owner and do not as on land bring in increased rent. The owners no doubt vary largely in their sense of responsibility, but medical opinion is dead against the employment, as an argument for nothing being done, that the men have all they require.

[1] Med. Klin., May 4th, p. 701.

The men are not good judges, and well contrived ans for sanitary improvement might often be ceived with apathy if not obstruction by those from hom their meaning was hidden. Seamen present ecial difficulties. They are young and strong, but ose disabled by bad sanitation drop out of employ- ent and are no more seen, and it is the duty of no ie to tell their friends that they were victims of ihygienic conditions which they themselves had ver reprobated. So the men do not realise their ndicap, yet their death-rate is higher (50 per cent. e Registrar-General has said) in the mercantile arine from disease than that of the ordinary nglish citizen.

The picture is improving. The men are better off an formerly; food and cooking are better; we arn from Dr. Mussen, for example, that the newer id larger ships at Liverpool are having crew spaces t, hospital cabins, and washplaces. Yet Dr. Howard- nes and others of experience tell us that in foreign ips more cubic space is given to the men and more tention is paid to cleanliness *compulsorily*, while nilar benefits are only *permissive* in British ships. me port medical officers find that the prevalence of rmin proves the men careless, but their difficulties e becoming recognised. Their employment is termittent; not even when employed are they well id; consequently, they live often in the poorest dgings of seaport towns, they are still apt to be eyed on by harpies, and all their possessions are in a g which they carry to their next abode, their ship, hich changes perhaps four times in a year. What is ere here to raise their standard of comfort or nduct? Fleet Surgeon Home told us recently that e disease-mortality that has decreased most among em in 25 years is that from alcoholism (0·9 to 0·2); es that not argue self-control? They seem to have ore deaths from enteric than have other men, and ie Registrar-General says their death-rate from olence "is quite beyond the range of land experi- ice." An old Elizabethan song probably expresses e views of all:—

> "We care for the merchantmen,
> Who do our State maintain."

ut do we care enough? If so, why do we leave their alth in the charge of the lay Board of Trade? Why ve we no one at the Ministry of Health to summarise nually the excellent reports of the medical officers f health of the port sanitary authorities, the only ctors who see the seamen and their conditions, and ho can tell us what they really need? We congratulate leet-Surgeon Home and Alderman Askew on having onsored a unanimous resolution at the recent ngress of the Sanitary Institute that this trans- rence of responsibility should occur.

THE ORTHOSTEREOSCOPE.

Of all the uses to which an X ray plant can be put ie most indispensable are the diagnosis and treat- ent of fractures and the location of foreign bodies. is precisely here, also, that an inefficient plant gives ost disappointment, and that the limitations even a clear and well-defined shadow-picture become vious. The search for a needle in a heel can still e almost as wearisome as in the days when its very resence was unconfirmed; while, unless views e taken from many angles, which is not always nvenient, the evidence that manipulation has stored alignment of bones after fracture may be eceptive. An apparatus that indicates the depth a foreign body or shows the planes in which the agments of a broken bone are lying, would meet the ne demand which even an elaborate and efficient lant has hitherto been unable to satisfy.

In THE LANCET of April 14th, under the title of tereoscopic Radiography, we noted that an apparatus as been designed to give true stereoscopic projections the fluorescent screen. We have lately had the pportunity of testing this apparatus and are impressed y the effect obtained. A limb is seen in perfect etail with the position and relation of the component parts in a true perspective. The projections and depressions on the bones are clearly visible; the limb looks as if it were made of more or less transparent material. No effort of eye or imagination is required in order to get the stereoscopic effect, and the image obtained is sharp. The apparatus is extremely compact and is remarkably easy to control. The amount of radiation falling upon the patient is little, if at all, in excess of that necessary in the usual type of apparatus. Protection appears to be satisfactory and the workmanship throughout is good. Without an extensive trial of the apparatus it is impossible to estimate its scope or its limitations. Certainly for fracture work and the location and removal of foreign bodies it will prove invaluable. The diagnosis of the position of a gastric ulcer, or of the site of obstruction in the intestinal canal, might well be rendered easier by a stereoscopic view. As to the radiology of the chest, we understand that several famous continental chest clinics have installed this apparatus. It is used in the upright position, and the screen may be viewed from any convenient distance. Ordinary radiograms can be taken, and a special carrier is available whereby two stereoscopic X ray photographs may be taken within one-tenth of a second of each other.

The Orthostereoscope is installed by Stereoscopic X-Rays, Ltd., of 67A, Baker-street, and will be demonstrated to members of the medical profession by appointment.

THE EFFECT OF EMOTION ON BASAL METABOLISM.

An attempt to study the effects of emotion on basal metabolic rate, pulse-rate and blood pressure is recorded in a concerted study[1] by Dr. H. L. Segal, Dr. H. F. Binswanger, and Dr. S. Strouse of Chicago. The emotional stimulus chosen in all cases was the dread of impending operation and the patients studied were divided into three groups; the first consisted of ordinary operative cases, the second of patients with hyperthyroidism who had received preoperative iodine therapy, and the third of patients with hyperthyroidism who had only received iodine in insignificant amounts or had had none at all. These patients had been in hospital for varying lengths of time and their basal metabolic rates had been determined. A test was done on the morning before the day of operation, and another on the actual day, and observations of the pulse-rate, blood pressure, and emotional state were made at the same time. In the first group no constant relation was found to exist between these factors, and the rise in the metabolism on the morning of operation was negligible. Of the 12 patients in the second group, only five showed outward evidence of emotional disturbance and the increase of basal metabolism on the morning of operation was slight or non-existent. In the third group, in order to make fair comparison with the other two, the patients were informed on a certain evening that operation would take place on the following morning, but when the morning basal metabolism test had been done operation did not take place. In this group all cases were found to have an increased metabolic rate on the morning of operation, the minimum increase being +12 per cent., and the average increase for the six cases in the group being +41 per cent. The authors consider that this increase is due to an increased production of epinephrin rather to an increased secretion of thyroxin, because the return of metabolism to normal after the fright stimulus had been removed was so rapid. A thyroxin reaction lasts days or even months. The reaction shown would be consistent with increased heat production due to epinephrin, for this is immediate and transient. The authors suggest a practical use for their observations, in that a rise in the basal metabolic rate on the morning of operation might indicate that an insufficient dose of iodine had been given.

[1] Archives of Internal Medicine, June, 1928.

TRANSMISSION OF FILARIA PERSTANS.

THE tradition that a doctor in the tropics must be observant of the strange phenomena of lesser and unregarded living things which the chances of general practice may bring under his eyes was founded by Patrick Manson. His infectious zeal for inquiry enthused his Chinese hospital dressers, and with their eager help, he made those famous observations on the development of *Filaria bancrofti* in the mosquito which formed the inspiring beginning of the modern science of tropical medicine. The example set by Manson has been followed by disciples of every nation, who though busy, like him, with the press of daily clinical duties, have yet managed to add to our knowledge of parasitology. Dr. Dyce Sharp, in the Cameroon has, almost as if on holiday, carefully observed and engagingly described the domestic affairs of gorilla and family. Moreover, with the simplest of material equipment, he has made valuable additions to knowledge in Manson's own subject of filariasis.[1]

In 1890 Manson found two new filarial embryos in the blood of a negro in the London Hospital who was suffering from sleeping sickness, and named one of these *perstans*. In 1898 the adult *perstans* was found in the mesentery of a Guiana aborigine by Daniels. In 1904 Bastian set out that any metamorphosis which *perstans* might undergo did not require an intermediate host for the purpose. Nevertheless Low, and later Fülleborn, conducted experiments with various mosquitoes, and with flea, lice, and tick, with negative results; except that both noted some development in the mosquito. The systematists were also at work. The proper classification of the worm gave rise to some discussion, and was disposed of only in 1926, when Yorke and Maplestone pointed out that Diesing had differentiated the genus in 1861 under the name *Dipetalonema*. So *Dipetalonema perstans* it must be; but for convenience, however, it is still referred to as *Filaria perstans*. The parasite is found in tropical Africa, and also in British Guiana and in New Guinea. Its principal area coincides with the chief habitat of gorilla and chimpanzee, in both of which apes it has been found. The adult worms are found usually in the root of the mesentery or in the perirenal tissues. The embryos appear in the peripheral blood by day and night, with a tendency to relative day or night periodicity. No more can be said than that in most cases the infestation appears to be harmless.

This was the position when Dr. Sharp began his investigations. In the Mamfe district of the Cameroon the incidence of infection is at least 92 per cent. of the native population. Dr. Sharp found *perstans* to be comparatively rare in the European, who to-day invariably uses a mosquito net at night. He reasoned that the vector of *F. perstans* must have far less opportunity of attacking the European; and since day-biting flies and night-biting mosquitoes attack black and white races impartially when these are unprotected, it was probable that the mosquito net was not the sole barrier against infection, but that the vector must also object to light even at night; for in no other way would the white man be protected while playing cards at midnight—an occasion when mosquitoes may be very active. Dr. Sharp asked his native servant, Kofi, if he knew of a small fly which bit at night only and did not readily pass through a mosquito net, but which must be very common in that region. Kofi quickly produced a very small fly (*Culicoides austeni*), which later proved to be an efficient vector of *F. perstans*. His master discovered in Kofi "a natural fly expert who never forgot or forgave an insect that bit him." He could distinguish by sight various species of culicoides. He knew them well. They fed only at night, and then only in the dark, and their needle-like prick was quite unlike the bite of mosquito or sandfly. Kofi had had to keep fire or lamp alight in his room at night to avoid their bites—then he had made himself a calico tent instead, under which he slept. From this tent, however, Kofi produced next morning [illegible] of these small flies (*Culicoides austeni*), all full of [illegible] blood; the females only are blood-suckers. And [illegible] the experiments began. Dr. Sharp declares they were carried out largely by Kofi's enthusiastic and untiring help, his amazing powers of observation, and his first-class vision—a necessity for seeing and catching these minute flies. *Perstans* embryos were found in Kofi's blood, and also in that of the two other house boys. All these and a fourth, Peter, joined willingly as helpers and experimental material, in the game of this friendly excursion in natural philosophy conducted in a bungalow in the steamy heat of the Cameroon. Peter was chosen for principal reservoir of *perstans* larvæ, and ready bait and feed for the culicoides vamps. *C. austeni* was discovered to be a determined night-biter—but darkness was essential. A lamp, giving a quarter of a candle power in a 7 ft. long tent was sufficient to discourage her advent. Wind deterred her, rain did not; a full moon gave almost complete protection from her. Captive culicoides were induced to feed in the day time by making the room dark and offering them an arm. Dr. Sharp's white arm was refused, though a black arm was eagerly bitten. A very high degree of humidity was found to be essential to the well-being of the fly and the development of her ova. Dr. Sharp undertook the difficult task of examination and dissection of the culicoides (1·5 to 2 mm. in length) at intervals of time after their infected feeds. He found that in *C. austeni* the *perstans* larva undergoes in eight days, an ordered development through short thick forms to one thinner form three times its original length. At this stage the larva has reached the fly's proboscis, and escapes thence by stretching and finally bursting the terminal membranous portion of the labrum. Seven per cent. of "wild" culicoides were found to be infected. There is, therefore, strong presumptive evidence that *C. austeni* is an efficient transmitter of *F. perstans* from man to man. Dr. Sharp's observations make it probable that *C. grahami* is also a natural vector of *perstans*. In the Mamfe division of the Cameroon the forest has given way to low orchard scrub or open grass land, and the streams are torrential and tend to dry up after the rains. It is probably the most heavily infected with filaria of any district in the world, though *F. bancrofti* is rare. Dr. Sharp has shown that apart from blood infection, infection of the skin itself with filarial larvæ is very frequent in the natives of all ages and both sexes. It was common to find natives under 16 years of age showing simultaneous infection with leprosy, yaws, *O. volvulus*, and *F. perstans*. The pathogenicity of the latter is not known, but in view of the notably low health condition of the population it is difficult to exclude this high degree of parasitism as an accessory factor of general unfitness.

[1] *Filaria perstans*, its Development in *Culicoides austeni*. Filariasis in the Cameroon, with Special Reference to Skin Infection by Microfilariæ, Trans. Roy. Soc. Trop. Med. and Hyg., vol. xxi., No. 5, February, 1928.

A PARATYPHOID OUTBREAK.

THE clinical details of the outbreak of paratyphoid fever which occurred in certain districts of Hertfordshire in November, 1927, were recorded in THE LANCET of Feb. 25th last by Dr. Iris Ward, house surgeon at the West Herts General Hospital, to which 43 of the cases were admitted. The prompt steps taken to ascertain and remove the source of infection were successful in limiting the epidemic to 166 cases. In a report[1] to the Minister of Health published to-day Dr. W. Vernon Shaw, one of the medical officers of the Ministry, sets out the details of the story from Nov. 15th, when the Minister received unofficial intimation of the presence of an epidemic of enteric fever in the Hemel Hempstead and Watford districts, until Nov. 24th, by which time 133 patients were safely isolated in hospital, and their homes disinfected and cleaned. On Nov. 16th, the day after his first visit to the district, Dr. Shaw had already elucidated the

[1] No. 53. 1928. H.M. Stationery Office. Pp. 16. 3*d*.

ıystery, and from this date onwards no further ɔread of infection occurred. The population of the ctual area invaded is about 21,000. Bacteriological xamination of the water, which is mainly supplied ·om public sources, yielded satisfactory results. rrangements for excrement removal, sewage, and ·fuse disposal are for the most part on modern lines. n the ten years prior to this epidemic there has been ttle prevalence of enteric fever, either typhoid or aratyphoid, except for an outbreak limited to the ınmates and attendants at one of the Metropolitan sylums Board's Hospitals in Watford Rural District ı 1926. During the last week of October, 1927, and ıe first week of November many cases of illness ccurred. These were at first diagnosed as influenza, ut on Nov. 11th notifications of enteric fever began ɔ reach the medical officer of health for the districts ɔncerned. In all 129 houses were invaded. In lmost every case notified the Widal test gave positive ·sults to paratyphosus B, and the same organism ·as identified in the urine and fæces of a number of atients. No deaths occurred. Inquiry showed ıat throughout the infected area the only factor ɔmmon to the persons affected was milk delivered to ıem by a retailer whose premises were situated in ıe borough of Hemel Hempstead. Dr. Shaw visited ll the farms on Nov. 15th and could only discover ny recent case of illness at W. farm, where one hild, K. X., was ill with "broncho-pneumonia." A ɔecimen of blood taken from this child gave a positive Vidal to paratyphosus B, and on Dr. Shaw's advice e was removed to hospital with her mother, Mrs. X., n Nov. 16th. The latter within a few days of admission eveloped a metastatic abscess of the left breast. ler fæces and that of the child were heavily infected ·ith paratyphosus B, and a specimen of her blood ·acted with this organism up to a high titre. Mrs. X. dmitted having suffered from diarrhœa on or about)ct. 10th, and is regarded as the source of the pidemic. It emerged that from Oct. 23rd onwards ıe had not only been washing the milk utensils, ɔoling the milk, and occasionally even milking, but lso nursing the sick child, and the potential infection f the milk was doubtless increased by her close ɔntact with the excreta of the child. Pasteurisation f milk at the premises of the retailer was commenced s early as Nov. 12th and was followed by a rapid iminution of the number of fresh cases of paratyphoid ·ver; but, according to Dr. Shaw, too great reliance ·as placed on the pasteurisation, which was carried ut in a rough-and-ready manner. In the course of he epidemic five roundsmen developed paratyphoid ·ver, and it is fortunate that none of them appears ɔ have been responsible for personally disseminating nfection in the course of delivering milk on his rounds. ıfter the removal to hospital of Mrs. X. and her child n Nov. 16th, further stoppage of the milk from the arm did not appear to be necessary, since other ıembers of the household were examined for infec- ion with negative results; the fact that no further ases occurred justified this policy. Dr. Shaw acknow- ·dges the assistance received from the county medical fficers of health, the practitioners of the district, and the fficials of the various sanitary authorities concerned.

The chief lesson to be learnt from the epidemic is he need for immediate laborious investigation in such ircumstances of any history of sickness occurring at dairy farm. Previous to Nov. 16th the child's ymptoms had been attributed to the respiratory ystem and the mother's own mild attack of diarrhœa, vhich must have been the first manifestation of the nfection, was only recalled to memory after the most earching inquiry.

Dr. Ambrose Owen has been awarded the Sir Charles Hastings Prize of the British Medical Asso- iation.

Dr. E. K. le Fleming (Wimborne) and Dr. J. W. Bone (Luton) have been selected by the British Medical Association as their candidates for the two vacancies as Direct Representatives of the Medical Profession on the General Medical Council.

Special Articles.

INTERNATIONAL CONFERENCE ON CANCER.

JULY 16TH–20TH, 1928.

(*Continued from p. 143.*)

SURGERY AT THE CONFERENCE.

THE Surgical Section at the conference organised by the British Empire Cancer Campaign had before it two principal subjects for discussion; the first of these was the classification and treatment of bone sarcomata. The forms of sarcoma affecting bone are many and the need for a convenient classification is great. Several of the surgeons from the United States of America described and praised the classification which was devised by Dr. Codman, for the purpose of a Bone Sarcoma Registry; this registry is now under the care of the American College of Surgeons, and to it are sent particulars of cases of bone sarcoma from all parts of the United States. The reports, including the clinical course, the operations, and the microscopical findings, are carefully examined and the cases classified, so that in time there will be collected a large amount of knowledge of a rather rare condition, of which most surgeons see only a few cases. This excellent plan might well be followed in this country, as there is certainly a great need for more knowledge on this subject. At the present time the most diverse views are held as to the nature of some of these tumours; for instance, there was a wide difference of opinion as to the malignancy of the tumour generally known in this country as a myeloma, for more than one American surgeon described it as truly malignant, while several British surgeons declared that, though malignant forms do occur, yet as a rule it is benign, and may be treated successfully in almost all cases by local removal. One speaker objected strongly to the name myeloma, and held that it grew from the endosteum and from osteoblasts, and therefore he suggested that a more suitable name would be osteoblastoma. On this the opener of the discussion stated that he did not believe in the existence of an endosteum; he had never seen it, and the most careful examination had failed to find it. All, however, were agreed that, if an improvement in the results of the treatment of the more severe form of sarcoma of bone can be achieved, it will be only by a recognition of the existence of the disease at a very early stage, and this is only possible if attention be paid to any persistent pain in a bone. If such a pain should fail to respond to simple treatment, it is certain that a radiograph should be taken, and the presence of a bone sarcoma may be revealed. In an early case such as this it may be possible in one way or another to treat effectively the sarcoma, while it is still confined to its site of origin. It may be that experience will show that radiation is the most efficient method of treatment, but it is agreed by all that in the vast majority of cases the early recognition of the disease is essential.

The second subject was the early recognition and treatment of cancer of the stomach. Here also the general cry was: "Let us see these cases early and it will then be possible to find the disease in a condition in which we may be able to remove it completely and so to prevent any recurrence." The same demand for early recognition of malignant disease and thorough treatment has long been made in the case of the breast, and the excellent results obtained with mammary cancer can only be had in cancer of the stomach if the cases are seen early by the surgeon. This can only occur if it is recognised by all that persistent indigestion in a person over 40 years of age should be taken as a sign that something more than mere "indigestion" is present, and that a

thorough examination should be made by the use of all the facilities provided by X rays and other diagnostic methods. The skilled interpreter of radiographs will be able to recognise at once, in most cases, whether a simple ulcer or a malignant growth is present. The statistics provided by several speakers showed how delay in the recognition of cancer of the stomach prevented in many cases any chance of the complete removal of the growth and the neighbouring lymphatic glands; in one series of cases, quoted by Prof. Wilkie, there were admitted into the Royal Infirmary of Edinburgh 675 cases of carcinoma during five years, but of these in only 60 cases was a radical operation possible. Early recognition is essential if any real improvement in the results is to be obtained. The later the operation the wider must be the excision and the more severe the operation, with an increase in the shock, and in the likelihood of thoracic and abdominal complications.

There was a little diversity of opinion as to the relation of carcinoma to simple ulcer of the stomach, but most of the speakers agreed that if chronic gastric ulcers were treated by excision, the number of gastric cancers would be reduced.

CANCER AND THE PUBLIC HEALTH.

THE discussions on the public health aspects of cancer on the last day of the Conference revealed a mass of painstaking labour. The achievement, however, was rather that of getting rid of unprofitable theories than in advancing new propositions. An immense amount of useless lumber has been cleared away in preparation for the edifice which will ultimately arise, but it is clear that the foundations of the future edifice are not yet dug.

The first discussion concerned geographical and racial prevalence of cancer. Certain facts were clearly brought out. One of the most important was the difference in mortality from cancer of the breast and uterus among the women of England, Holland, and Italy. For cancer of the breast the death-rate in the Netherlands is a little over one-half that of England and Wales, and in Italy it is about one-half that of the Netherlands. Another point is, that while the death-rate from other forms of cancer is substantially correlated with mortality from non-cancerous diseases, no reliable correlation can be discovered between cancer of the uterus and breast and fatal non-cancerous conditions. Prolonged and exhaustive inquiries from the statistical, clinical, and other aspects have failed to reveal the cause of these discrepancies. They are not due to differences of age or constitution, or to the proportions of married women in the groups. Differences in treatment do nor explain them, nor do racial factors, exhaustively studied by many speakers, serve to elucidate the problem. One of the most illuminating papers was that by Dr. Sourasky on the incidence of cancer among Jews. He was able to show that race had nothing to do with it, but he explained the low incidence of cancer of the penis and uterus among Jews by their observance of the Mosaic code. The inference is that a more careful study of environment might bring an answer to some of the problems of geographical prevalence of cancer. The conclusions of most speakers with regard to racial prevalence were tentative owing to insufficient data, but the consensus of opinion was that race could not be invoked in explaining the distribution of cancer mortality.

A discussion on public action in regard to cancer should have as its corollary recommendations on action to be taken. The public naturally want to know what is to be done. What practical answer can the conference give? A perusal of Sir George Buchanan's paper shows that the Ministry of Health is not idle, but he supplies a statement of problems, rather than a categorical answer to questions of practical politics. Indeed, to the question, how cancer can be prevented, the answer can only emerge through continuous intensive study. But, as a result of their studies, members of the conference were ab to explode many fallacies such as that diet caus cancer, or that the disease does not occur in nati races. With regard to prevention, the only thi which can be done is to attend to general hygien remove sources of chronic irritation, and treat co ditions which are known to lead to cancer. Wit regard to therapeutics the outlook is more hopefu Modern methods of radiation may help to indu patients to seek advice earlier by allowing them feel that they need not necessarily undergo a operation. Notification of cancer was suggeste but most speakers felt that at the present state our knowledge it would have no value. A proposa which although theoretically excellent was thoug by many to be unsuitable to English conditions, w the establishment of cancer clinics. There seems be a prejudice in the minds of the British publ against such places. The divergence of views the subject of propaganda was extremely interestin Often, of course, the views held were a reflexion national characteristics. Sir George Buchanan w undisguisedly thankful that propaganda had nothi to do with his department. Prof. Maisin, of Belgiu insisted that the best form of public education was t education of the practitioner. Lectures and popul instructions were only secondary and must be us with prudence. Dr. George A. Soper, of New Yor blazed forth propaganda—books, pamphlets, poste in 20 languages, moving pictures and radio, new papers and "cancer weeks." He reckoned he h reached 41,000,000 people every day for two wee by one series of newspaper articles. Dr. Reiman who followed him with cold statistics on the tir elapsing between the patient first noticing a path logical condition in the breast and coming for advi found there was no indication that the educatio campaign going on since 1914 had had any effe The pith of the matter was voiced by the Preside who warned enthusiasts to beware of fussing over pub health. This is a view which appeals to the Briti public, and whatever sensational methods m succeed elsewhere, propaganda in this country mu be adjusted to the prejudices of the people if it to be effective in influencing their mental outlook.

THE SECTIONAL DISCUSSIONS.

THE main work of the Conference was divid among a number of sectional discussions which to place concurrently in the mornings. Tuesday h already been reported, Wednesday to Friday follo

WEDNESDAY, JULY 18TH.

CLASSIFICATION AND TREATMENT OF BONE SARCOM

Prof. J. EWING (Cornell), opening the discussi at the Section of Surgery, Sir CHARLES GORDO WATSON being in the chair, claimed that classification of the sarcomata of bone h much more than an academic interest. T classification proposed some years ago by Codma of Boston, who suggested the registry of bone sarcom was very convenient, though it was not perfe This registry had been taken over by the Americ College of Surgeons. Since sarcomata of bone we rare it was only by an accumulation of the experien of many surgeons that right views could be form of the true nature of these growths, and the b methods of treatment of the several varieties. T registry had now very full notes of over 900 cas classified into four classes: osteogenic sarcoma (i.e., sarcomata derived from bone), giant-cell growths, myelomata, and liposarcomata. Prof. Ewi discussed the varieties and explained their relatio to one another. As to treatment, Prof. Ewing point out that the first and almost invariable symptom bone sarcoma is persistent unexplained pain in a bo Such a pain called for a provisional diagnosis sarcoma, and then a careful radiographic examinati would generally detect the presence of the grow and in this way early treatment was possible. Wh the signs pointed to a true osteogenic sarcoma

illary, subperiosteal, sclerosing, or telangietic the best treatment was probably immediate itation, immediately preceded, if necessary, by opsy. With nearly all other forms of bone ma radiation competed with surgery in treatment. more malignant the tumour the better was the nse to radiation and the worse the outlook from ry. Bulky tumours and those with much destruc- of bone did not give a good result with radiation amputation should be performed. The more nant varieties were generally fatal with any od of treatment. If one considered the difficulties gnosis, the severity of the standard of treatment, the high mortality, the conclusion must be n that the present-day treatment of bone sarcoma ery unsatisfactory.

. W. SAMPSON HANDLEY (London) said that in ast majority of periosteal sarcomata of bone tation was followed by recurrence; he was ed to think that the use of radium was the best s at our disposal for dealing with them. In one he employed 500 mg. of radium for 24 hours the patient was well nine years after. The on must not be afraid of causing necrosis of if he wished to be sure of destroying the whole e growth. Ultimately the necrosed portion of would be separated. In children the risk of icing necrosis was small. As to the ultimate of radium treatment its great value was shown e case, in which some months after the growth been destroyed the patient found the limb so s that he asked to have the limb amputated. was done and the bone which had been affected sarcoma was very carefully examined; no trace alignant disease could be found in it. Out of ases of osteosarcoma of the ilium three had been . The method of treatment was to turn back n flap and then a gluteal flap; the projecting of the sarcoma was cut off with a chisel, and a f radium tubes was inserted in the growth, with other tubes within the ring.

WILLIAM B. COLEY (Cornell) maintained that eriosteal sarcoma of bone amputation was ically useless, though it might be employed the toxin which he had devised. The toxin had y definite value, though its use required very care.

JULIAN TAYLOR (London) said that in order to stand sarcomata of bone it was of the greatest to make skiagrams of thin sections of the ed bone, and he stated that in all the tumours d examined the effects to be seen were those of ion of the various parts of bone by the malignant ur. That proved that a malignant stimulus had applied and that the effects upon the various of the bone were essentially the same whatever ature of the malignant growth.

CHANNING SIMMONS (Boston) praised the ican registry of bone sarcoma. He stated that tation was the best treatment in very early He had found radium very useful, especially the growth had arisen as the result of trauma.

f. FICHERA (Pavia) laid stress on the value of grams in the diagnosis.

FRANKLIN MARTIN (Chicago) explained the gements made of the registry of bone sarcoma, suggested that it might be used not only in la and the United States, but also in other ries.

R. C. ELMSLIE (London) said that primary teal sarcoma was the rarest form. The diagnosis ne sarcoma had to be made partly by the site artly by the radiogram, but there was only one n method, and that was by exploration and the scopic examination of a small portion removed. nsidered that in cases of myeloma curetting was ch more valuable method of treatment than surgeons seemed to think.

f. M. J. STEWART (Leeds) expressed the opinion a giant-celled tumour was a special tumour of He considered it wrong to call it a myeloma, it arises not from the bone-marrow, but from the fibrous endosteum and osteoblasts. He suggested the name osteoblastoma.

Prof. ARCHIBALD YOUNG (Glasgow) described an interesting case. A young woman had a bone tumour removed from the mandible 12 years ago. Subsequently similar tumours appeared on several bones; eight years ago some of these were removed from the ribs and elsewhere and later still similar tumours affected nearly all the bones. The skull showed Paget's disease. On microscopic examination of the tumours removed both sclerosis and rarefaction were present.

Mr. HANDLEY remarked that Coley's fluid was useful as an adjunct to radiation.

Prof. EWING, in reply, stated that he had been struck by Mr. Handley's method of removing a portion of a bony tumour and embedding radium within it.

SOME PRESENT-DAY MEDICAL ASPECTS OF CANCER.

Sir WILLIAM WILLCOX, who presided at this Section, began by calling on Sir THOMAS HORDER to open a consideration of

Cancer Cachexia.

Although, he said, there were causes enough to explain the condition, these were independent of the presence of malignant cells; the question should therefore not be judged to be solved by assumptions, however probable. He went on to put forward the suggestion that there might be something specific in the cachexia of cancer, study of which might be of service both in diagnosis and pathogenesis. In illustration of this, one had only to assume that the cancer cell might contain an intracellular micro-organism which on disintegration of the cell might liberate a toxin of specific qualities; the cachexia produced by benign tumours undergoing necrobiosis would serve as controls. Treatment, he considered, should prolong life without adding to the patient's discomforts and produce the best possible material for surgeons and radiologists to work on.

Dr. WILLIAM HUNTER remarked that the degree of cachexia was nothing now to what it was 30 years ago. He considered all sources of sepsis should be treated besides that due to the cancer itself.

The CHAIRMAN said the subject of cancer cachexia was a very important one and should be approached from the point of view of: (1) cancer toxæmia; and (2) other sources of sepsis. He added that Sir T. Horder had foreshadowed a possible specific treatment.

Sir JAMES DUNDAS-GRANT considered that the general practitioner's point of view—"How can this be cancer if there is no cachexia?"—was a dangerous one.

Alleged Increase of Cancer of the Lung.

Dr. ROBERT HUTCHISON said that the general impression amongst clinicians in recent years was that there was a considerable rise in incidence of primary cancer of the lung. He showed records of autopsies performed at the London Hospital which bore out this statement. As for ætiology he mentioned three theories: 1. The supervention of cancer on the catarrhal changes in the lungs associated with influenza, pointing out, however, that cancer of the lung began often as an acute illness and might simulate influenza. 2. Irritation of the lungs by tar dust from roads. 3. A possible connexion between pulmonary tuberculosis and cancer; this was not substantiated at autopsies.

Dr. L. S. T. BURRELL said that malignant disease of intrathoracic viscera was seen in three main groups: (1) endothelioma of pleura; (2) carcinoma of lung; and (3) sarcoma of mediastinum. He agreed that primary carcinoma of the lung had become more common of late, and said that it often started acutely owing to the growth ulcerating into a bronchus and producing collapse of lung. Diagnosis, he said, had become easier because of: (1) artificial pneumothorax enabling the relation of lung to tumour to be seen; (2) examination by thoracoscope; (3) examination by bronchoscope; (4) X ray examination after injection of lipiodol. In treatment the only possibility of cure

lay in lobectomy: X rays and radium temporarily diminished the size of the tumour.

Dr. C. POWELL WHITE (Manchester) read a paper prepared jointly with Prof. SHAW DUNN and showed slides of graphs made from records of autopsies on primary malignant growths of the thorax from Birmingham General and Queen's Hospitals, Edinburgh Royal Infirmary, Glasgow Western Infirmary, Leeds General Infirmary, London, University College Hospital, Manchester Royal Infirmary, all of which with one exception—Leeds—showed an increase in the incidence of intrathoracic neoplasms during the past 25 years.

Prof. T. SHENNAN (Aberdeen) said the occupations of the cases he had examined were varied, therefore of no ætiological value. The predominant growth was a small-celled carcinoma (the oat-seed cell type described by Barnard). In all there were areas impossible to distinguish from short spindle-celled sarcoma. He had himself come to the conclusion that the spindle shape was the result of mechanical influence on the plastic cell substance. As possible predisposing factors he suggested old-standing pulmonary disease and "gassing" during war service. Prof. Shennan then showed slides and microphotographs illustrating his paper.

Dr. W. G. BARNARD (London) showed microphotographs proving that the majority of tumours diagnosed as sarcomata of the mediastinum were in reality medullary carcinomata of lung. He said that histologically parts of a growth might show typical oat-shaped cells, but other parts of the same growth showed transition to carcinomatous tissue—i.e., polygonal cells and tendency to squamous epithelium; oat-shaped cells could also be found in carcinomata.

Dr. LEONARD HILL (London) said he had been feeding mice on different diets and had found the spontaneous cancers of the lung—to which mice were very subject—were uninfluenced by diet.

Prof. DUNCAN GRAHAM (Toronto) endorsed former speakers' experiences in regard to the increased incidence of primary cancer of the lung. He considered the sudden onset of symptoms were due to ulceration of the growth into a bronchus with mechanical obstruction. He did not consider influenza an ætiological factor.

Dr. J. C. TULL (Singapore) and Dr. J. ANDERSON (Hong-Kong) both gave as their experience that primary carcinoma of the lung was rare in their respective districts: they said, however, that primary carcinoma of the liver was commonly associated with biliary cirrhosis, possibly due to the fact that 85 per cent. of patients had had syphilis.

Dr. W. C. MACCARTY (Mayo Clinic) considered the increasing incidence of cancer of the lung as a great problem in the near future.

Dr. A. T. TODD (Bristol) suggested arsenic as an ætiological factor in view of its general use in treatment.

The CHAIRMAN said that it was helpful to get the experience of medical men from all parts of the world, and that it was interesting to know that new growths of the lung were carcinomatous and not sarcomatous in origin.

Dr. HUTCHISON, replying, said that general opinion agreed that there was a definite increase in the incidence of primary cancer of the lung. Little light had been thrown on ætiology; he viewed with diffidence Prof. Shennan's suggestion that preceding lung disease was a factor, since the growth itself set up chronic inflammatory changes. He thought there was no evidence that "gassing" or arsenic favoured malignant growth, and diet was known to have no influence.

BIOLOGICAL EFFECTS OF RADIUM AND X RAYS.

Prof. SIDNEY RUSS took the chair at this discussion, when special reference was made to the factors of wave-length, intensity of radiation, and duration of exposure.

Prof. C. REGAUD (Radium Institute, Paris), who opened, said that experiments on the normal tissues of higher animals showed a varying reacti different tissues if changes were made in intens irradiation and duration of treatment. With to human skin, Friedreich and Krönig show 1918 that, given the same quantity of rad earlier and more marked effects were produced the dose was given in a shorter time. W dose was spread over a long time the effec progressively less. In the latter case, the the total dose should be augmented. But it mistake to suppose that the experimental obtained with human skin could be applied to tissues. In 1927 Ferroux and Regaud, working X rays, showed that sterilisation could n produced in the male rabbit without causing n of the skin. When a massive dose was used, ho it was filtered. On the other hand, sterilisation be easily and constantly produced without causi serious and lasting lesion of the integuments dose was extended over five days. Behavio different tissues varied under different perio exposure. The explanation, he thought, mu sought in the alternation of the radio-sensitivity cellular stocks, which were dependent on the re processes of the normal and neoplastic tissues.

Prof. H. HOLTHUSEN (Hamburg) said the q of rays must be chosen according to the depth focus to be treated. In the case of superficial di soft rays were preferred, while for deep th strongly filtered rays of high intensity were able. No quantitative rules had been made. rule which had been impressed upon him was th skin-tolerance dose should not be exceeded in ap a certain focal dose. It seemed clear that the no difference between the strength and the bio effect of hard and soft rays within the lim technically employed rays, including the sup rays. Pathological conditions responded better dose of radiation decided upon were spread number of days or weeks.

Dr. D. QUICK (New York) read a paper in wh purpose was to correlate some of the experi findings with clinical observations. In experi work variations were bound to occur, and no angle of approach would afford an adequate of such a complex subject. There was a wide v of opinion as to the wave-length which sho employed. In discussing the possible reas reactions occurring, he said too much was based upon physical measurements. Did it that the rays which were calculated as being were all absorbed? He was sure that the pro of energy absorbed differed with each organ. not depreciate the value of biological researc submitted that there existed an equal need for clinical observations, based on trial on the subject.

Dr. G. BUCKY (New York) pointed out the p position occupied by the skin in the mat response to radiation; it differed from all organs. He gave results on the skin of the 100, 60, and 30 kv.

Dr. R. G. CANTI (London) spoke of the relat of radiation effects to the factors of intensi time, and said there was a threshold of inten radiation below which no biological effect took Similarly, there was a threshold of minimum which had to be exceeded for results to occur.

Dr. N. S. FINZI (London) confined his atten the question of the latent period, which he re as of probable importance in discovering the n action of radiation. The definition of latent was "the space of time after the applica radiations before some of their effects obvious." The larger the dose the shorter v latent period. The latent period varied according to the tissue receiving the dose salivary glands had a latent period of only a few as shown by the stoppage of salivary secretion latent period for dry skin was 17 days—i.e., t at which erythema began to appear; also, w same dose, it was the time at which hair f

egrowth of hair took place in three months. ther generalisation he gave was that the longer wave-length of X rays the shorter was the latent od, and vice versa. But there was a large range iedium wave-length for which the latent period the same. An important adjuvant was moisture. ie skin was kept moist the latent period was half it was in the dry state. Heat shortened the it period, especially moist heat, as also did the ence of metallic salts on the skin.

r. L. MALLET (Paris) said that gamma rays specially efficient for epithelioma of the mouth cancer of tongue, palate, tonsil, and pharynx. ll forms of cervical cancer only X rays gave a good t.

of. F. C. WOOD (Columbia) emphasised the varia- y in resistance to radiation of all kinds of biological erial, and described the method of inquiry being ued at his centre. Their conclusion was that so as the rays reached the depth required the al wave-length was not important.

her speakers were Dr. S. N. WATERMAN sterdam), Dr. A. PINEY (London), Prof. W. NE (Harvard), Dr. W. C. STEVENSON (Dublin), Colonel S. MORT (London).

ie CHAIRMAN, in summing up the discussion, said e was much difference among radiologists as to her the biological effects of X rays depended on wave-length. It was a case of attempting to e generalisations when there was no basis for n. The question did not arise in the laboratory, was primarily due to clinicians. Some workers gone as far from the clinical as possible, using of various organisms and calculating as far as could the energy absorbed by these ova. Efforts now being made to settle the question without ng the mind by the use of ova.

OCCUPATIONAL CANCER.

ie Section of Pathology, Statistics, and Public lth met under the Presidency of Prof. W. S. ARUS-BARLOW.

rs. J. C. BRIDGE and S. A. HENRY, of the Home e, presented a statistical review of industrial er in this country. They recommended, as the effective prophylactic measure, the substitution nocuous bodies for those with known carcinogenic erties. If this were impossible, early detection treatment were the only measures. Inquiries not elicited a single case of cancer in the X ray stry. They suggested that research into occu- onal cancer of the skin, especially among women, ld yield valuable results.

r. T. H. C. STEVENSON (London) spoke of the ortance of social distribution; nonconformist Anglican clergymen occupied the first and second es in a list of 178 occupational groups arranged everse order of cancer mortality, while Roman olic priests came sixteenth. The certified mor- y of the clergy from syphilis was also remarkably Comparison between cancer and alcoholism easured by cirrhosis of the liver, showed similar less striking results, and Dr. Stevenson concluded both syphilis and alcohol had a carcinogenic ence.

rof. G. SCHMORL and Dr. O. ROSTOSKI (Dresden) ribed the endemic lung cancer of the miners of neeberg; they regarded the anthra-cochalicosis s from which the men suffer as pre-cancerous and undetermined the primary causal factor. The o-active dust in the Schneeberg rock might play rt. In six cases multiple primary tumours had n found, and in four there was a latent period, r ceasing work, of 10–18 years.

r. ALEXANDER SCOTT (Broxburn) described the e prevalent lesions caused by semi-refined and le mineral oils and paraffin—viz., papular derma- , erythrodermia, and epithelioma. The cancer dence in the works of Scottish Oils, Ltd., among men, was less than 0·1 per cent. per annum. chief predisposing factors were age, length of ice, and idiosyncrasy. Early detection, by periodic examinations, was the most valuable prophylactic measure. Multiple primary growths were common.

Mr. A. H. SOUTHAM (Manchester) gave an account of mule-spinners' cancer, in the ætiology of which idiosyncrasy and dry skin played an important part. The condition could easily be detected at an early stage and excision was satisfactory except in the case of the scrotum, where glandular involvement was more frequent. Multiple primary growths were occasionally encountered.

Dr. L. CAROZZI (Geneva) discussed occupational cancer, pointing out the inadequacy of present methods of detection. He pleaded for an international medical inquiry on uniform lines, and for a set of guiding principles for revelation and detection of the injurious element in each "carcinogenic" industry.

Dr. A. F. SLADDEN (Swansea) described the epithelioma of South Wales patent-fuel workers, ascribed to gas-works pitch. Usually the growths were superficial and of low malignancy. Systematic medical inspection and prompt removal of warts were important prophylactic measures. The scrotum was the most dangerous area.

Prof. W. J. O'DONOVAN (London) presented a clinical review of occupational skin cancer due to tar, arsenic, oil, and X rays. He pointed out the frequency of a latent period and of multiple primary growths. The prognosis for early cases of tar cancer was very good, and treatment by flat plates of radium was satisfactory. The possibility of actinogenic carcinoma required investigation. He pleaded for a centralised record of amputated carcinomatous hands.

Dr. W. M. DEVRIES (Amsterdam) said that occupational cancer was rare in the Netherlands; cases had occurred in briquette factories, where pitch-dust was in the air.

Dr. F. L. HOFFMAN (U.S.A.) discussed the statistics of cancer incidence and mortality among industrial workers. Estimation was difficult in America because the men very frequently changed from one establishment or from one occupation to another. Dr. Hoffman had been unable to find any record of a case of cancer among lead workers.

Dr. E. L. KENNAWAY (London) discussed statistical data of 921 fatal cases of cancer of the penis and scrotum; the ratio of scrotal cancers to cancers of the penis was lowest among agricultural workers, lower in clerical than in manual workers, and lower in those doing light than heavy work. He suggested that cancer of the scrotum affected especially those who washed least and were exposed to the dust of towns.

THURSDAY, JULY 19TH.

RELATIVE VALUES OF SURGERY AND RADIATION.

Mr. J. P. LOCKHART-MUMMERY took the chair at the resumption of the discussion, commenced on Tuesday morning, on the relative values of surgery and radiation in the treatment of cancer of the cervix uteri, rectum, breast, and buccal cavity. Prof. BURTON LEE (New York), opening, spoke on conservatism in the treatment of

Primary Operable Cancer of the Breast.

He held that conservative surgery deserved as much credit in his results as radiation therapy, and preferred the combined use of the two methods to radical surgery with radiation. Radium was more effective in mammary cancer than X rays; it was especially suitable for patients who also had an intercurrent chronic disease and for those who rejected radical surgery.

Mr. W. SAMPSON HANDLEY asked: 'Can either radiation or operation alone cure breast cancer?" He showed slides proving that surface radiation could destroy or arrest the growing edge of a group of permeated lymphatics, but concluded that, owing to the great extent and depth of the surface to be treated, it was unsafe to trust to radiation alone. Although the primary growth and the enlargement of the glands

might disappear dissemination continued. Operation alone might at first sight appear to be sufficient, but an analysis of his recurrences showed that breast cancer, when it came to operation, was usually already a thoracic disease, and therefore that no operation was complete unless a systematic attempt were made to deal with the intrathoracic extension of the disease by buried radium. For the present surgery and radiology must be colleagues, not competitors. Buried tubes generally relieved, and might cure, recurrent breast cancer when the surgeon was helpless. For supraclavicular recurrence a combination of excision with buried tubes gave the best results, but it was useless to try to excise fixed supraclavicular glands.

Dr. ROBERT KNOX (London) compared Dr. Janet Lane-Claypon's figures of the results of surgery in 2000 cases with those of a small series of patients treated with X rays. Surgery gave appreciably better results in early cases, but in second-class cases the rays seemed to hold the advantage with 53·6 per cent. of cures against 42·1 per cent., and in the worst cases there was no comparison. Buried radium had not yet proved its value.

Mr. GEOFFREY KEYNES and Dr. J. H. D. WEBSTER (London) summarised papers which appeared in THE LANCET of July 21st and 14th respectively.

Cancer of the Mouth.

Dr. DOUGLAS QUICK (New York), in his opening paper, said in no other group of cases was radiosensitivity so important as in this; the more adult the type of a growth the more resistant it was. Treatment by external radiation would produce complete regression in the more embryonal types of growth, but for squamous-celled carcinoma the application of radon in gold capillary seeds was also necessary. This method, in his clinic, was applied, in the maximum intensity consistent with tissue tolerance, to the local lesion and to both sides of the neck. Mouth hygiene was important, but bad teeth should not be extracted until after irradiation had produced its maximum effect. Prolonged moderate doses were preferable to short intense ones. Surface applicators within the mouth were not recommended. Surgery was not used in direct treatment, but was often a necessary auxiliary to give access to the tumour, to remove bone in cases of secondary invasion, and to remove bulky masses after irradiation.

The treatment of metastases of the neck glands was more important than that of the primary growth. External radiation was sometimes assisted by buried seeds; the 4-g. radium pack was better than X rays, but good X rays were better than inadequate radium. Once the disease involved both sides of the neck it was regarded as incurable.

Mr. STANFORD CADE (London) concluded, from a study of 50 cases, that the treatment of election in mouth cancer consisted of three stages: radium therapy of the primary growth, surgical removal of the cervical glands, and post-operative distance-irradiation of the cervical area. Radium gave the only hope in metastatic involvement of the neck.

Prof. G. E. PFAHLER (Philadelphia) described the use of pure γ radiation, which was painless on application, produced no mutilation or constitutional symptoms, preserved the function of the tongue, and usually caused the disappearance of metastatic lymph nodes.

Dr. B. E. ROSE preferred the diathermy knife for inoperable growths, with irradiation after about a month. Inoperable growths should be treated by radium unless the alveolus were extensively involved, when they should be left alone. The gland fields should be excised if possible and the wound irradiated, but the results of irradiation on inoperable glands were bad.

Evaluation of Statistics.

Dr. JANET E. LANE-CLAYPON (London) laid down in her opening paper the fundamental necessities of any statistical inquiry. Only by rigorous statistical methods, she held, was it possible to estimate the advisability of modifications in practice or the v of other agencies.

Prof. F. C. WOOD (Columbia) and JÜNGLING (Stuttgart) pointed out the urgent nece of minute histological subdivision of the va classes of patients in assessing the value of va therapeutic methods. The former postulated deaths of untreated or rejected patients shoul taken into account, and the latter pleaded fo international standard, without which it was impos accurately to correlate one set of figures with ano

CHEMOTHERAPY, WITH SPECIAL REFERENCE T LEAD.

Sir THOMAS HORDER, who presided at a discus on the lead treatment of cancer and other met of chemotherapy, appealed to the speakers to with the issue on a clean slate, dismissing from minds any attempt at prejudgment on ill-dige material.

Prof. BLAIR BELL (Liverpool) read the paper w appears on p. 164 of our present issue.

Prof. F. C. WOOD (Columbia) thought no would deny that lead would have an effect malignant disease in the human subject, but considered that a greater effect followed X There were cases that yielded entirely to lead. lead and gold colloid had been used by hin experiments on rats. His conclusion was that optimum period for those metals was after the dose of X rays. The fact that tumours did not in size did not mean that they had not been seric damaged by the treatment and their growth chec

Dr. BURTON SIMPSON (Buffalo) spoke of 19 cas malignant disease which had been treated colloidal lead, prepared according to the Blair method, all in an advanced stage of the disease, had already had surgery or radiation or both. Ca urine and blood analyses were made each day. clinical improvement was observed in any of cases, but very soon after the administration was a severe toxic action on the blood, with secon anæmia. Nausea and vomiting were frequent, some of the patients had pronounced jaundice. one of the 19 cases was now alive. The treatment now, owing to the suffering of patients, been aband at the institute. Dr. Simpson said this unfavou impression was supported by all whom he had h from on the subject.

Prof. WALTER DILLING (Liverpool) thought no final estimate of the therapeutic value of was likely to be reached for a considerable Lead seemed to exert a special action on gro tissues of embryonal type and sublethal conce tions of lead ion retarded growth, particularly in y animals. His experience was that while lead the produced marked benefit in some cases of malig disease, it left others quite uninfluenced for good could not be regarded as parallel to the effe arsenic in syphilis. Even slight modifications i routine of preparation rendered the colloid less He showed the results obtained by Prof. Heilbro Liverpool, in testing the toxicities of various or lead complexes. Safe injections were colloidal phosphate, with three equivalents of sodium ac and colloidal lead selenide. He related the resu searches for lead in normal tissues and found spleen, liver, lung, and kidney contained the gre proportion.

Mr. BASIL HUME reported the results of an in gation by a committee of St. Bartholomew's M College, every care having been taken to follow cl the Liverpool method, Prof. Bell having expresse full approval of the method after a visit. He gav details on which the following conclusion was b In 13 cases treated by lead alone 11 died, aft average life from commencing the treatmen 13 weeks. The two survivors (carcinoma of b had not improved. Seven patients had deep therapy after preliminary injections of lead c In one case the lead was injected into and aroun growth, as the patient was not suitable for the

iod. Of the other six, one received a full first and id course, two a first and a partial second course, in the other three the whole or part of the first se only. In none of them was improvement onstrable while under lead treatment. In a rity of the cases the growths increased very ily under the treatment, but none of the patients ed to have died as the result of acute or chronic poisoning.

. STANLEY WYARD (Cancer Hospital, London) red to his work on eosin and selenium, and said success in treating cancer in animals by these been claimed. No metal had been found by ari to be more potent than others. Prof. had claimed better results from lead treatment had any other worker. At the Cancer Hospital ases had been treated with lead colloid, and the age duration of life after treatment was com- ed was five months, but after receiving 0·3 g. of the average life was 7 months 3 weeks. Of atients who received sufficient lead 23 died, ere worse, 6 showed no change, 1 was somewhat oved.

. G. LOEWY (Paris) referred to the finding of rman that lead had a curative action on trans- ed rat cancer. In every human case, however, caused grave intoxication. He had been using idal oxide of lead in glycogen in an isotonic ion of 5 per cent. on dogs, which showed very oleration to it in a dose of 4 mg. per kilo of body- ht. The toxic dose was 5 mg. Clinical tests ed a remarkable human tolerance to the colloidal with glycogen, and the best dose was probably g. Women were more susceptible to it than ; it was stable and could be preserved for several hs. No cure had, however, been obtained with t its innocuousness led him to resolve to continue se.

. A. P. THOMSON (Birmingham) said that in ases treated by lead the treatment seemed to ence the progress of the disease favourably in hough in most only temporarily. By the system ial and error he thought it was possible to know in a short time of commencing the treatment her it was likely to be successful. In the cases h improved the hæmoglobin had never fallen low. Patients were not now given as large a as Blair Bell originally suggested.

. H. F. B. FRY (London) spoke of the pathological ges seen by him in the fatal cases treated with by Dr. Wyard, especially in the kidneys and liver, h were most probably due to the lead.

of. BELL, in reply, remarked that little had been on chemotherapeutical principles ; the discussion turned largely on clinical details. In Liverpool tific curiosity was not allowed to outrun anity, and for that reason attention had not been ned to lead alone ; a goodly proportion of the cancer cases treated there had had deep X ray py in addition to lead. Every patient must be idually treated or satisfactory results could not xpected. Why was it that patients coming to from London had been imbued with a fear of ble reactions occurring ? These allegations had made in *Nature*, and that journal had refused to t his rejoinder. He had brought the treatment e state that made reactions practically negligible. ize of the growth after treatment was no criterion malignancy, for it might be cystic or necrotic. re did not proceed by leaps ; one must not look he miraculous. In answer to Mr. Hume, it was he did what he could to help the work at St. holomew's ; his complaint there was that in ases only half the treatment had been given, and usions based on these were not fair.

. T. LUMSDEN (Lister Institute) gave an exposi- on tumour immunity and the position of the apts to kill cancer cells without damaging normal e. He suggested that those who treated tumours radium should not try to get rid of the local th too hurriedly, so as to cause sloughing, wise immunity was hindered.

Prof. F. BANG (Copenhagen) read a paper setting out the results of minimal optimal doses of metallic salts in increasing the defensive mechanism of the body.

Dr. M. COPEMAN (London) pointed out the good effect of surface applications of fluoresceïn prior to a mild dose of X rays in carcinomata. He showed a number of slides setting out the favourable results, and advocated an extensive trial of the method.

The CHAIRMAN, in summing up, dealt with three questions which had been raised in the discussion : (1) Have any patients got well after treatment by lead and (not to quibble) as a result of it ? The answer, he thought, was in the affirmative. (2) Can we undertake the responsibility of advising patients to undergo lead treatment ? I feel, he said, we have not yet arrived at the point of safety which will enable us to do this. (3) What are the next steps to take ? Further search should be undertaken for lead preparations less toxic than those now in use, with the hope of widening the margin of safety at present dangerously small.

FRIDAY, JULY 20TH.

EARLY RECOGNITION AND TREATMENT OF CANCER OF THE STOMACH

Sir BERKELEY MOYNIHAN opened by remarking that the symptoms described in the text-books were those of well-established disease, with organic changes so firmly rooted that there was little chance of complete removal of the growth. The early symptoms varied enormously in different cases. In some the onset of the disease was rapid and even in a very few weeks the tumour was found to be beyond the reach of the surgeon. In some cases the symptoms closely resembled those of duodenal ulcer, while in others they were simply those of dyspepsia, and might be temporarily improved by medicinal treatment. In other cases, again, the symptoms were those of obstruction, at either end or in the body of the stomach. Hæmorrhage might be an early and severe symptom, and sometimes a diagnosis of pernicious anæmia was made, while cases had been diagnosed as suffering from malignant disease of the stomach when the disease had really been pernicious anæmia. Thus it could be seen that the clinical picture was so various and so multiform that by observation of symptoms alone a correct diagnosis might not be possible. Different opinions were held as to the relation of cancer of the stomach to simple ulcer ; but there could be no doubt that cancer might develop on a gastric ulcer, for when operating for gastric ulcer the surgeon might find that at one part of the simple ulcer there was a carcinoma ; if the case had been seen later the malignant growth would have spread throughout the whole of the simple ulcer. It was important to recognise that cancer of the stomach, like cancer elsewhere, was certainly a local disease, and while it was small it was curable by operation. If the disease was allowed to reach a stage of extensive development the chance of complete removal was greatly diminished. In any cases occurring in a patient over 35 an early radiological examination was imperative, for in this way only was early diagnosis possible. The early infiltration of the muscle caused a loss of movement at the affected part. In any case of doubt an exploration of the stomach was essential.

Dr. A. F. HURST (London) said that there could be no doubt that a chronic ulcer of the stomach could become malignant. He laid stress on the importance of looking for occult blood in the stools, and he agreed that X rays generally gave such a clear picture that the diagnosis was certain. The achlorhydria of cancer of the stomach was probably due to a chronic gastritis which preceded the appearance of the malignant growth. Hitherto the early diagnosis and treatment of chronic gastric ulcer had alone been considered in discussing the prophylaxis of cancer of the stomach, but it now appeared probable that chronic gastritis was a much more common precursor. It could be prevented by dental hygiene, the treatment of oral and nasopharyngeal sepsis and common

sense dietetic rules. When present it could be cured by removal of the cause, together with lavage every morning with dilute hydrogen peroxide until no more mucus is removed.

Dr. EDMUND SPRIGGS (Ruthin Castle) pointed out that, though the newest methods, such as X rays and chemical tests, enabled us to recognise the presence and nature of the lesion at an early stage, the first suspicion must arise from the study of the earliest symptoms. It was not sufficient to say that a patient had indigestion and to treat this merely by medicine or diet; indigestion was not a diagnosis; it may be due to any one of many causes, but it must be remembered that the earliest manifestations of cancer of the stomach in no way differed from those of indigestion from other causes, except that the symptoms did not disappear rapidly with simple treatment. Dr. Spriggs detailed the main symptoms of carcinoma in the order of their appearance: discomfort in the abdomen apart from food, loss of appetite, pain after food, heartburn, flatulence, vomiting, regurgitation of mucus, weakness, loss of weight, dysphagia, and tumour. In a few cases hæmatemesis was the first indication of the disease. A palpable tumour was always a late sign; as a rule it meant that the growth was inoperable, but not always. In any case in which the possibility of malignant disease of the stomach was suspected all the methods of diagnosis should be employed; the fæces should be examined for occult blood, the gastric juice should be tested, and X rays should be used. The earliest objective sign of cancer was probably local arrest of the peristaltic wave of the stomach as shown by X rays.

Prof. H. FINSTERER (Vienna) said that as a cancer of the stomach can be cured only by an operation, an operation should always be attempted as long as there are no signs of metastases, such as ascites and jaundice. The extent of the cancer largely influenced the operative results. If the disease was limited to the stomach and only the stomach had to be resected, the immediate results were relatively good, for the operative mortality in his cases was only 5 per cent. Part of this good result was due to the use of local anæsthesia in elderly patients. If owing to involvement parts of the pancreas, liver, or colon had to be resected the operation mortality was far higher, over 37 per cent.; yet even in these patients resection was justifiable, for some had survived for 5 to 13 years. To get good permanent results the operation must be very radical, the whole lymphatic area must be removed, even if the glands were not apparently diseased. The whole of the greater and lesser omentum also must be removed. In 18·5 per cent. of his cases the cancer had developed in a simple ulcer.

Prof. RAFFAELE BASTIANELLI (Rome) reviewed his personal experience of 543 cases. The mortality of 239 resections was 28 per cent.; of 176 gastro-enterostomies, 21·5 per cent.; and of 118 explorations, 15 per cent. The mortality figures of any surgeon depended largely on the sort of case he would undertake to operate upon. Prof. Bastianelli's guiding principle was to remove the stomach as often as the anatomical conditions would allow and as extensively as possible. A great part of the operative mortality was due to thoracic complications. For several years he had employed local anæsthesia in gastric operations, giving a general anæsthetic in addition only where necessary. He favoured a Polya Reichel technique. A study of the recurrences was of importance in determining the extent of an operative technique, and a general routine ought to be adopted in all advanced cases. He did not think that the ovaries are affected from stomach cancer by cells dropping on to their surface, but that the invasion occurs from the hilus by lymphatic spread. Surgical technique had now reached a very high level, but it could not be expected that more than 7 per cent. of patients with stomach cancer seeking advice would be likely to be cured. It was therefore essential to study precancerous lesions, to use preventive surgery, and to recognise the earliest symptoms of cancer.

Prof. M. J. STEWART (Leeds) pointed out that generally possible to decide whether a cance arising from an ulcer. In an ulcer of the sto there is a definite destruction of the muscular with a turning up of the ends of the bundles of fi In 239 cases of cancer of the stomach there 15 per cent. in which the growth had certainly st from a simple ulcer. He showed some striking s in which cancer of the stomach was associated w large number of gastric polypi.

Mr. A. J. WALTON (London) stated that there evidence that gastric cancer is increasing; in in his own practice, it is becoming a less freq disease, and this fact he was inclined to attribu the fact that many patients have been saved carcinoma by having their simple gastric ulcers tr surgically. As to the results of operation, bet 1913 and 1924 he had performed 62 partial gas tomies; of these 3 could not be traced. Subseque 55 had died of recurrence and 4 were still alive these 4 one had lived 15 years, one 12 years, 10 years, and one 7 years. To better the resu was, in the first place, essential that a correct diag be made earlier; in the second place, since a ce number of cases arise in simple ulcers, these shou treated surgically if they did not respond readi medical treatment.

Prof. D. P. D. WILKIE (Edinburgh) mentioned in over 44 per cent. of all cases of cancer the sto is affected. It was an insidious disease and diagnosis was essential if any real benefit was derived from operation. Among 675 cases adm into the Royal Infirmary, Edinburgh, only in 60 was a radical operation possible. Examinatio X rays after a barium meal was by far the valuable form of evidence, though it was not abso infallible, for in some malignant cases a diagnc a simple ulcer has been made. Since there v chance of error in all available diagnostic metho question of an exploratory incision should a arise where doubt existed. It was advisable everyone should be submitted to periodical m examination; for then in many cases mali disease would be recognised at a stage when ope would be most valuable. Treatment by rad offered less hope in this than in almost any othe of cancer.

Dr. MACCARTY quoted the statistics fron Mayo Clinic. Of 1680 cases of operation c stomach 869 were for chronic ulcer and remainder were for cancer. The operation mo of the cancer cases was 9·5 per cent.

Mr. HERBERT W. CARSON (London) said th cause of the low percentage of cancers of the st suitable for operation was that patients came surgeon at too late a stage. Middle-aged or ol should not be treated for indigestion until canc been ruled out. The earliest sign was generally appetite, followed by loss of energy and wastin at an operation the complete removal of the was impossible, benefit and increase of comfort often follow a jejunostomy.

Sir BERKELEY MOYNIHAN, in reply, urge diagnostic methods should be cheapened, an he regarded as the duty of the Government. It pay insurance companies to charge reduced pre to a person who could at intervals of six m produce a certificate that he had undergone a th examination by a competent doctor. Cancer stomach, as cancer elsewhere, is a local disease, should be recognised and removed at the possible moment.

DIAGNOSTIC METHODS IN RELATION TO CAN

Sir WILLIAM HALE-WHITE being in the Sir THOMAS HORDER opened the discussion subject. Since, he said, we believe the disease a local condition in the first stages, early di was imperative; a difficulty of paramount imp was introduced, however, by its local characte it deprived us of serological and analogous m dependent on generalised effects. Diagno

on, presented three stages: First, a local change no general disturbance, the curable stage; dly, dysfunction of the part with anatomical e; thirdly, the stage of cachexia. In early osis he placed great value on the significance of toms—he could hardly emphasise sufficiently nportance of dyspeptic symptoms in a patient ously perfectly well; he thought the school taught that cancer intervened on chronic psia and other conditions were entirely wrong; majority of patients the disease arose in healthy s. He pleaded for simplicity of technique in otomies; patients might then be more willing bmit to them. All additional aids should be yed when suspicious symptoms arise—radio- biopsy, serology, hæmatology, and biochemistry. T. IZOD BENNETT (London) said that treatment pious hope for the future, early diagnosis was roblem for to-day. Prognosis in cancer of the ch was at present far worse than cancer in any situation since early symptoms were so ous and access to the organ was difficult. There he said, three diagnostic procedures of great X ray photography was the method of first , a loss of mobility appeared before a filling , also the presence of an ulcer in a patient whose y was of brief duration should raise suspicion of nancy. He gave no support to the theory that nancy supervened on chronic ulceration. Gastric sis, he said, when carefully performed, yielded le diagnosis in about 90 per cent. of cases; signs often most conspicuous in the fasting content. acid, when present, was said to establish the osis beyond question. Finally, gastroscopy, he ht, was a method for the future, although at it disappointing. Serological tests would be un- , he thought, to diagnose cancer at a curable stage. MACCARTY (Mayo Clinic) said the dominant in America was "Bring your sores and lumps physician early." In his opinion no cancer was if larger than ½ cm. in diameter. X ray nation by an expert would tell if there was a in the stomach, and ulcers should be excised se diagnosis of malignancy could not be made. speaker showed a chart illustrating stages in opment of cancer from gastric ulcers, and said 39 of 869 cases showed malignant change. nancy could be expected when the average ter was 2·17 cm.

f. L. S. DUDGEON described his technique shed in the *British Journal of Surgery*, 1927) for g rapid wet-film examinations of neoplasms. id that autolysed tissues and fixed tissues were able for investigation. Considerable skill was ary, but he could now diagnose correctly in r cent. of cases.

f. LEWIS (Liverpool) said that normal blood acting on pancreatic lipase augmented its tic power. In certain conditions, including r, the lipolytic augmentation was reduced. He d tables to prove that in cases treated with linical deterioration went hand in hand with a sing lipolytic augmentation, whilst improve- accompanied a rise.

f. BLAIR BELL said that while the lipase yme activity of the serum was not a specific ostic method, it was of great value in assessing rogress or retrogression of malignant disease.

f. ASCOLI (Catania) said he saw the immediate of sero-diagnosis of cancer in the methodical ch in non-specific reactions.

H. J. B. FRY (London) described a flocculation on in routine use at the Cancer Hospital for the liagnosis of malignant disease. In 1550 malignant control cases correct results were obtained in per cent. The reaction appeared to depend on icts of cellular or tissue disintegration.

J. BRAXTON HICKS (London) described work he Dr. Hocking had undertaken to evolve a comple- -fixation test for cancer. They were, he said, red from the beginning for negative results, the fixed tissues of a part seemed so indifferent to the intrusion of cancer cells; their work was further complicated by deterioration of the antigens. The results proved inconclusive.

Dr. S. MELVILLE (London) talked on diagnosis of intrathoracic neoplasm by X rays. The radiologist sees not the growth but the result of stenosis of the bronchus; when less commonly, the growth invaded the lung, the diagnosis was much more difficult. Two great aids in diagnosis, he said, were production of artificial pneumothorax and injection of lipiodol. In illustration he showed skiagrams on the epidiascope.

Prof. E. C. DODDS (London) said that he and his assistants had worked for three years testing methods for diagnosing malignant disease from a study of the composition and behaviour of the blood. In particular he had investigated the Abderhalden, the Shaw-Mackenzie, and the Ringold methods; all these investigations proved the methods quite unsuitable for the diagnosis of malignant disease.

Dr. K. ITCHIKAWA (Japan) showed a chart illustrating the modifying effects of varying amounts of albumin and globulin in Botelho's serum reaction for early diagnosis of cancer; in certain cases it appeared possible for it to give a positive reaction where no cancer was present.

The CHAIRMAN, in closing the discussion, said that in advocating laparotomy, obvious risks must not be forgotten such as mortality from anæsthetics, adhesions, and the bad effects on neurasthenic patients. The physician should therefore have strong grounds on which to base a recommendation for operation. The results of sero-diagnosis were, he thought, disheartening; the most reliable test seemed to be the biopsy test. He referred to the great discordance of opinion as to the frequency of cancer of the stomach in regard to gastric ulcer, and suggested that it was probably more common in America than in other countries; in his experience it was a very rare occurrence. He said that in his opinion the test-meal was of great value in diagnosis, particularly ferment activity and the absence of active hydrochloric acid. He considered that the only hope of cure lay in early diagnosis.

On the same day the Section of Radiology, under the chairmanship of Dr. ROBERT KNOX, discussed the

EFFECTS OF RADIUM AND X RAYS ON CIRCULATORY SYSTEMS, WITH SPECIAL REFERENCE TO MALIGNANT GROWTHS.

Prof. F. C. WOOD (Columbia) said that the effect of radiations, electric currents, and even excessive heat and cold upon the blood-vessels was to cause a thickening of their walls. The vascular changes following exposure to radium and X rays were especially clear-cut, and probably played a part in the therapy of tumours and in the chronicity of ulcers following over-dosage. Twenty-four hours after heavy exposure the intimal endothelium of small arteries and the muscular coat were swollen, and as the process became chronic the œdema disappeared, the endothelium proliferated, and the vessel might be closed. Veins showed only a slight thickening of walls. The importance of this change lay in the reduction of the blood-supply to the part, consequent on the arterial thickening, and this was a factor in the arrest of a tumour. Lymph vessels, at an early stage of irradiation, showed no alteration. Later some dilatation might be observed, but the vessels did not become closed. No therapeutic doses of irradiation were capable of closing lymphatics.

Dr. A. LACASSAGNE (Paris) asked what part was played in the regression of cancerous tissues by circulatory changes following irradiation, and said he thought it was largely a question of starvation due to restricted blood-supply. As to the lymphatic vessels, knowledge as to what occurred in these following the use of rays lacked precision, though it was clear that in cancer-sterilising doses irradiation might disturb the lymphatic circulation, at least in certain regions of the skin. To kill the cancer cells—a necessary condition for the cure of a malignant neoplasm—it was necessary that the radiant energy should impinge directly on to them. Sclerosis of the dermis, and

consequent obliteration of the lymphatic circulation might sometimes retard and localise the growth of certain cutaneous cancers.

Prof. H. HOLFELDER (Frankfort-on-Maine) said it was recognised that in dealing with cancers by radiotherapy the object was to cause the degree of reaction which normal tissues could just tolerate without sustaining permanent damage. An excessive dose of X rays led to a more or less complete obstruction of lymphatic and smaller blood-vessels, especially the capillaries, thus obstructing nutrition to healthy tissue. This must always be avoided. For even a lethal dose of radiation to be effective on cancer, the help of the connective tissue was needed, and this complex intracellular metabolism was conditioned mostly by the blood and lymph flow. There was always an interval after irradiating a growth before any sign of reduction was observable.

Mr. CLIFFORD MORSON, speaking as a surgeon who practised radiology, said that a large dose of radium caused extravasation of blood, whereas a smaller dose produced obliteration of the blood-vessels, without rupturing their walls. Malignant growth of a blood-vessel (endothelioma) could be destroyed by irradiation. In the treatment of malignant disease by irradiation it was important to remember that the greater the vascularity of the organ in which the tumour was growing, the better the results from such treatment; good examples were growths of tongue and uterus. The cutting off of the blood-supply had three advantages: immediate cessation of the hæmorrhage, deprivation of nourishment to the tumour, and the retention of any substance which exerted secondary radiation.

Dr. DOUGLAS WEBSTER spoke of metabolic changes in the blood. He said it was agreed that huge doses of irradiation were needed to damage the cancer cells directly, and it was necessary to take into consideration also the connective tissue stroma of the growth, and the blood and lymphatic distribution.

Prof. H. HOLTHUSEN (Hamburg) pointed out that as irradiation could alter the sensitiveness of the skin the erythema following deep irradiation was not always a safe indicator as to the dosage being applied.

Dr. F. T. BURKITT referred to the direct action on blood produced by pure gamma rays.

Dr. W. LEVITT spoke of a series of cured cancer cases which he had treated by intensive X ray radiation, in all of which there was, during treatment, a rapid decrease in the lymphocyte count.

The CHAIRMAN thought that until quite recently the indirect effect of irradiation on tumours had not received adequate attention, but he had now been able to organise research on this aspect, in the hope that guidance for treatment would emerge. Already practical results had been achieved. His own view was that a drop in the lymphocyte count was an indication to go slowly with the irradiation. He was not sure that the profession even yet realised the damage which might be caused by injudicious exposures.

GEOGRAPHICAL AND RACIAL PREVALENCE OF CANCER.

At the Section of Statistics and Public Health the chairman, Lieut.-Colonel F. E. FREMANTLE, M.P., in his opening remarks, emphasised the value of the study of public statistics. They were often extremely suggestive. At the same time it was most important to guard against a wrong use of statistics, for they easily lent themselves to false representation.

Prof. MAJOR GREENWOOD (London) sought to define the problems at issue and give some account of the data needed for their solution. In comparing the mortality of cancer in different races great differences were found, but it had to be decided: first, whether these differences were merely the outcome of better or worse systems of recording; and, secondly, if not, whether they were due to habits of life, climate, and other environmental factors, rather than to differences in racial character. These questions had never been satisfactorily answered.

The majority of those who had studied official statistics were satisfied that the mass comparis national rates of mortality from cancer was at pr of little value. However, the comparison mad the Health Organisation of the League of Na between cancer of the breast and uterus in the fe populations of England and Wales, Italy, and Netherlands showed clearly that death from can these sites was far more common in England, wh gastro-intestinal cancer was more prevalent in other countries. No explanation had been foun this. The total mortality from cancer in countries was about the same.

The fact that this national contrast was sp and not general suggested that its origin was to be environmental. For instance, they v expect that kangri cancer would occur with si frequency in all races who adopted the parti practice which was the exciting cause, although expectation might be falsified by racial variatio responsiveness. When it was a question of p logical change in sexual organs they might spec as to whether the explanation might not be in difference in the sexual practices of the peopl question, a subject of which little was known. conclusion drawn was that they had not suff data nor sufficiently powerful methods of stati analysis to solve these problems. With the obj adding to these data he desired to refer briefly t regional distribution of cancer in England and W

Cancer was regionally less variable than the tuberculous respiratory diseases; in fact, its variability was not great. Unfortunately the ex English data were quite inadequate for the characterisation of different parts of the cou If the sharpest contrast from the racial point of was made which the data permitted—viz., betwee Welsh cities and those of the east of England—i found that for cancer as a whole the two groups practically identical rates, although for other c of death there was a large difference.

The scanty collection of data available serv confirm the impression that the geographical racial factors of variability were of less importa cancer than in other great causes of mortalit point of interest which emerged from the Leag Nations' study was that whereas mortality fro other than uterus or breast was correlated mortality from non-cancerous conditions, no re correlation could be discovered between mor from cancer of these sites and mortality from cancerous conditions. This complicated the pr and was an additional argument for his cont that we needed more facts before we could hypotheses.

In the absence of Prof. A. NICEFORO (Naple Prof. E. PITTARD their communications were marised by Prof. GREENWOOD.

Prof. NICEFORO divided Europeans into the fol races or anthropological types: *Homo nordic alpinus*, *H. mediterraneus*, *H. orientalis*, *H. din* Italy was peopled by representatives of the alpinus and dinaricus in the north, alpinus or m raneus in the centre, and mediterraneus in the and islands. He found statistical correlation b the presence of the Mediterranean type of stature, dark, dolichomorphic cranium, an lower rate of cancer incidence, while the prese the brachymorphic alpinus and dinaricus was ciated with a higher cancer-rate. But he d whether it was race or race alone which influen cancer mortality, for in some provinces of n Italy inhabited by populations of the Mediter type the cancer incidence was as high as that o northern provinces. The author then con racial types and cancer incidence in other Eu countries. He could draw no conclusions fr facts available, and was of opinion that the p was so complicated that even where excellent m was available the statistical method by itsel not suffice. He proposed a new way of study question by direct examination of some thous

ncer patients. It could then be seen whether rtain morphological characters were more frequent cancer patients or not. It would be easier to carry it than the other and might lead to more certain nclusions.

Prof. EUGENE PITTARD (Geneva) discussed the iestion of race. In Europe the Nordic race appeared be most affected by cancer, the Mediterranean race ast. He compared the rates of mortality from cancer Sardinia, Sicily, and Malta. They were respectively ·4, 41·1, and 48·2. Sicily showed a higher rate than rdinia because its racial condition was less homo-neous. The rate in Malta was explained by the esence of a colony of Nordic Britons. London had much higher cancer mortality than New York. ew York had a heterogeneous population; London is mainly Nordic.

Dr. M. SOURASKY (London) read a paper on the cidence of Cancer among Jews and the Problem of Specific Racial Factor in Cancer. In studying cancer nong Jews account must be taken not only of the mparative incidence of cancer mortality, but also at of various organs separately. There was no truth natever in the suggestion that Jews were immune om cancer, nor were they specially prone to it. The eaker showed figures from six European capitals in pport of his statement. Speaking generally the riation was geographical, not racial.

But when the incidence of cancer of the various gans was examined it was seen that cancer of the erus, penis, and buccal cavity was less among Jews, ilst that of the gastro-intestinal tract showed a eater frequency. Cancer of the tongue was about lf as frequent in Jews as in the non-Jewish popula-on. This could be accounted for by the lower cidence of syphilis, and therefore of chronic super-ial glossitis amongst them. Their immunity to nile cancer was explained by circumcision. A nilar immunity was found among the Mohammedan dians, who practised circumcision, while the ndoos of the same race who did not were prone to attacked. The figures for carcinoma of the breast ried, being sometimes lower, sometimes a little gher than those for the rest of the population. In ndon the mortality from breast cancer among the orer Jews was decidedly lower (60·9 per cent.) and at of the richer somewhat higher (103·7 per cent.), mpared to England and Wales generally (100 per nt.). The explanation here was simply a matter of cial status; among the richer Jews were more married women, later marriages, and a lower birth-e, all of which factors favoured breast cancer.

The remarkably low incidence of uterine cancer ne-third to one-half the number occurring in the st of the population) appeared to be due to the servance of the Mosaic ritual laws by the mass of wish women. Their main provisions were the ohibition of coitus at certain times and the imposi-on of frequent ritual baths. The practice of this de produced a high degree of sexual cleanliness and stricted cohabitation at times when rest was obably beneficial. Some continental authorities ld that while carcinoma of the cervix was a disease married life pregnancy was not an essential factor. is view was not widely accepted, but it was clear at married life was the usual precursor of cancer the cervix. A well-regulated sex life might erefore be a favourable factor in the avoidance of sease. In any case, obedience to the Mosaic code sulted in a highly satisfactory sexual hygiene.

With regard to the high mortality among Jews om gastro-intestinal cancer no ætiological factor uld at present be brought forward. Racial predis-sition had no evidence in its favour. It could only suggested that the well-known tendency of Jews wards metabolic disturbances should be remembered this connexion.

Dr. PERCY STOCKS (London) read a paper on the idence for a regional distribution of cancer preva-ice in England and Wales. He concluded that after rrection for sex, age selection, urbanisation, and grational selection the mean cancer indices of the county areas grouped themselves into definite regions of high and low prevalence, showing that geographical influences were in some way concerned. The large towns showed wide differences which could not be explained by their age or social distributions, and their rates tended to be generally consistent with those in the surrounding country.

Dr. MATTHEW YOUNG (London) was unable to be present. His studies of cancer mortality and the distribution of racial types in Scotland suggested that if any real association existed it was in inverse ratio to that shown in other parts of Europe, for the greater the proportion of the Nordic type in the population the less the cancer mortality.

Dr. R. M. F. PICKEN (Cardiff), in discussing Dr. Stocks's paper, pointed out the danger of drawing conclusions when all the factors were not understood. South Wales was racially no more Welsh than the English counties around North Wales. Probably Liverpool and Lancashire had more Welsh stock than the Welsh counties.

Commander GIBBON showed statistics of the incidence of cancer in the Navy and in the native labour force at Singapore. The figures of incidence of gastro-intestinal cancer paralleled closely those of the incidence of disturbances of the digestive system in general.

The second discussion on the same morning centred round

PUBLIC ACTION IN REGARD TO CANCER.

The opening address by Sir GEORGE BUCHANAN (Ministry of Health) will be found elsewhere in this issue.

Prof. J. MAISIN (Louvain) considered that the most effective way of prosecuting the campaign of cancer in any country was to provide a number of anticancer stations. The stations should be of two kinds: primary fully equipped stations and secondary stations. Each station should be under the charge of a director, who should be a laboratory man with good clinical knowledge or a physician, because the choice of a surgeon or radiologist might tend to a one-sided view of the scope of research or a consequent suppression of initiative in some directions. The station must be equipped like a large modern hospital and must have first-class specialists in all branches of medicine. Supervision of patients who have undergone treatment must also be provided for and a complete system of records kept up. Research centres were a necessary part of each station. Centres of instruction for young practitioners were absolutely indispensable and courses of instruction in the early diagnosis of cancer should be made compulsory. Lectures, popular instructions, and the distribution of pamphlets should not be neglected, but they were of secondary value and should be used with prudence so as not to provoke carcinophobia. The duty and interest of the public was to assist by every means at their disposal in the realisation of such an undertaking.

Dr. G. A. SOPER (New York) described the work of the American Society for the Control of Cancer. This Society had sought to instruct the public concerning cancer by means of pamphlets, posters, lectures, moving pictures, radio, magazine, and newspaper articles, and finally by "cancer weeks." The latter especially appeared to arouse great enthusiasm and led to thousands of people coming up to be examined in the temporary clinics held, many cases of cancer being thereby discovered.

Dr. STANLEY P. REIMANN (Philadelphia) had made a careful statistical study of the influence of the educational campaign on the interval between discovery and consultation in mammary carcinoma. During the years from 1900 to 1927 inclusive there had been a steady decrease in the time interval between the discovery of carcinoma by the patient and consultation with the physician or surgeon. There had been no inflection in the curve to indicate that the educational campaign begun in 1914 had had any effect. The improvement during the first 14 years when there was no educational propaganda was just

as great as during the last 14 years. The speaker liked to think the steady progress was due to better training of physicians.

Sir JOHN ROBERTSON (Birmingham) discussed the cancer problem from the point of view of a medical officer of health. In Birmingham cancer mortality was on the increase, especially among males. Fifty years ago the incidence was one male for every two females ; now it was one male for every one female. The type of district made no difference. In those who had died of carcinoma of the breast the average time between the patient noticing a lump and applying to a doctor was 10·2 months. He did not advocate compulsory notification because of the difficulty of offering suitable treatment to all cases. The public should be educated as was done for tuberculosis.

Dr. VEITCH CLARK (Manchester) advocated the public control of cancer as the immediate practical way of dealing with the disease. He was not in favour of cancer clinics. Quack treatment of cancer should be made illegal. It was necessary to clear the public mind of misconceptions concerning cancer. He described the work now being done in Manchester.

Mr. ARTHUR COOKE (Cambridge) proposed the establishment of clinics where routine breast examinations of the whole female population could be made once a year. In a population of 100,000 there should be something under 100 cases for discovery annually.

Prof. FICHERA (Milan) described the Vittorio Emanuele III. Cancer Institute of Milan, opened on May 1st of this year.

Dr. L. M. MCKILLOP (Queensland) gave statistics on the incidence of cancer in Australia and described the Queensland Cancer Campaign.

Dr. MORTLOCH BROWN called attention to the needs of rural districts. She criticised the use of the term "pre-cancerous."

The CHAIRMAN said there was one thing he wished to impress upon his audience—the duty of refuting statements made on untenable statistics. In the last few months a campaign had been going on amongst the medical profession that certain forms of food produced cancer. An eminent surgeon was even devoting his life to persuading the public that cancer was due to eating meat. There was nothing whatever in statistics to support this. The statement that cancer of the intestine was unknown in India had been entirely refuted. He commented on Dr. Sourasky's remarkable paper and thought that the Mosaic law could give them points in prevention of cancer. Dr. Reimann's paper showed the failure of flamboyant propaganda and the value of steady educational progress. He himself advocated medical inspection every five years after the age of 40. There was no definite message from this Conference. They could not show much to be done on communal lines at present, but they were going forward. They must look to the laboratory workers, especially to pathology, for help. Meanwhile attention to general hygiene had effect in curtailing the ravages of cancer.

THE CANCER HOSPITAL DINNER.

At the invitation of the medical and surgical staff of the Cancer Hospital, about 120 guests sat down to dinner at the Langham Hotel on Thursday, July 19th, when Mr. W. Ernest Miles, senior surgeon to the hospital, presided over a distinguished and representative international gathering. After the loyal toast Sir Berkeley Moynihan proposed "The Cancer Hospital," describing surgery and research as the two arms of medicine at the present day, full use being made of both at the ideal hospital, of which the Cancer Hospital was a notable example. Mr. Miles, in replying, referred to the inspiration which the late Sir Charles Ryall had been to all his colleagues on the staff. Mr. Miles then proposed "The Overseas Visitors," whose achievements he described as beacon lights along the dark road of cancer research. Surgery, he said, it was now admitted, no longer stood alone in the treatment of cancer ; radiology stood alongside it, and the wise surgeon would be an expert radiologist, or the wise radiologist an expert surgeon, if indeed, as would be better, the two did not coöperate. T veteran Prof. J. Rotgans, of Amsterdam, and J. B. Murphy, of the Rockefeller Institute, New Yo replied for the visitors, the latter giving the resu of his search into the early documents of the Canc Hospital, which was, as he had discovered, "found for the relief of a disease for which science has yet afforded so little help." He remarked on t courage of calling it frankly a "cancer" hospi (which would be impossible in the United State thus helping to remove that terrific dread and hor which was so potent a force in aiding the spread cancer in a community. Sir Charles Gordon-Wats proposed "The Chairman" in a neat little spee Amongst those present were Prof. R. Bastianel Prof. J. Ewing, Prof. C. Regaud, Prof. H. Finster Sir John Bland-Sutton, Sir F. Gowland Hopkins, S Thomas Horder, and Sir Richard Garton.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Rabies in Chicago.

Prof. E. O. Jordan, of the University of Chica and Dr. E. E. Irons, dean of Rush Medical Colle representing the Chicago Institute of Medicine, ha issued a public statement of the growing menace rabies in that city. During the first five months this year 561 dogs' heads were found rabid o of 704 examined in the laboratory of the hea department. In the same period for 1927 only heads were found positive out of 56 sent for examin tion. In May of this year there were seven tim as many positive diagnoses of canine rabies as in t whole of the year 1926. In the last 12 mont 1046 persons known to have been bitten by ra dogs have been given the Pasteur treatment ; t figure, however, does not include an unkno number treated by private physicians. There w no human deaths from rabies from 1919 to Augu 1927, in the city, but since that time no less th 19 deaths have been reported. Muzzling is cal for and the prompt destruction of all stray unmuzz animals. One may be sure that if Mayor Thomps had not removed from office the competent co missioners of health whom he found in charge of department, it would not have been necessary the Institute of Medicine to issue this urgent warni

Key Catalogue of Insects.

The fourth of a series of key catalogues on medi zoology recently issued by the United Sta Public Health Service, is entitled Key Catalo of Insects of Importance in Public Health.[1] has been prepared by Prof. C. W. Stiles, of the Pul Health Service, and Dr. Albert Hassall, of the Bur of Animal Industry. Accurate classification cross-indexing make the index exceedingly valua to all interested in medical entomology. For exam a dermatologist in search of the caterpillars wh cause urticaria looks up this word in the introduct under Dermatology, and finds cross-references to different genera of moths and butterflies, the lar stages of which cause urticaria in man.

Risks of Tourist Camps.

A menace to vacationists in this country is rapidly growing number of tourists' "camp These camps vary in their conveniences from a s of untidy earth on which motorists may put up t tents and cook a picnic meal, to small colonies comfortably furnished wooden or stucco cotte with numerous modern conveniences at he including shower-baths and an electric laundry. S of the State health departments, as, for exam Indiana, have become awake to the need of inspec such wayside camps, for insanitary privies

[1] Hygienic Laboratory Bulletin, No. 150. Surgeon-Ge U.S.P.H.S., Washington, D.C.

ontaminated water-supplies are not at all uncommon mong them. The Indiana health department pro-ides a certificate of approval, which is to be dis-layed prominently, and also undertakes to close amps which are not found satisfactory, or which o not become satisfactory after reasonable notice as been given.

MEDICINE AND THE LAW.

Parents' Responsibility for Operations on Children.

In his last annual report the medical officer of ealth for Cumberland dwelt upon recent proceedings gainst parents who declined to submit their children o operations for the removal of adenoids and tonsils. hese cases, under Section 12 of the Children Act, leging neglect of a child by reason of failure to rovide adequate medical or surgical aid, naturally xcite controversy, and the local newspapers have ublished letters in which the action of the parents stoutly defended. The medical officer, it is said, merely balancing two remote contingencies. A hild is unlikely to die under an operation for removing denoids; on the other hand, it is unlikely to die to suffer serious damage if no such operation curs. Many people, it is argued, live fairly happy nd comfortable lives, as life goes in this ill-constructed orld, with tonsils and adenoids complete. It is a hoice between two remote possibilities—death or rious injury under operation on the one hand, nd grave injury to comfort, through throat fections, on the other. Positive certainty of con-derable pain and the disagreeable consciousness of utilation attach to one choice alone. Such are the mments which proceedings under Section 12 evoke. hey resemble the comments on other occasions—in nnexion with vaccination, for example. There is he same association with strong family feeling, love liberty, distaste for operations, and dislike of fficial interference. Parents, fond of a child, aturally resent the allegation of criminal neglect hich Section 12 imputes.

While it is impossible to ignore these hostile views, is too late in the day to put them forward in a urt of law. The case of Oakey *v.* Jackson, in 1914, ft no doubt whatever of the parents' duty. A girl 13 was suffering from adenoids which were causing ental dullness, impaired breathing, deafness, and me anæmia; the only possible remedy was a surgical peration for removal of the adenoids. Failure to rmit that remedy was alleged to be causing unnecessary suffering or injury to health" within ction 12. The father and mother thought an peration unnecessary; they did not believe in perations, and they refused to allow the child to go the infirmary where the operation could be per-rmed. On their behalf it was argued that the ct never intended to make surgical operation mpulsory; the performance of the operation and he administration of the anæsthetic must involve me measure of risk to life; parents were justified refusing to take the risk, and such refusal was not failure to provide adequate medical aid. The stices agreed and declined to convict, but the King's ench Division remitted the case to them for recon-deration. Darling J. quoted the dictum of Lord ussell of Killowen C.J. in Reg. *v.* Senior: "neglect the want of reasonable care—that is, the omission such steps as a reasonable parent would take, such are usually taken in the ordinary experience of ankind." Applying that opinion to Jackson's se, Darling J., with an unusual disregard for the anons of judicial ignorance, remarked that it was ot necessary to know much about surgery to know at the operation for the removal of adenoids was ry common in the case of children, and that a ilure to perform the operation might result in anger to life if the child should ever happen to be ttacked with illness. The parent, he continued, as under a legal liability to allow the operation if the fusal to do so was in the circumstances a failure to provide adequate medical aid. It was a question of fact in each case, and the justices might very properly have convicted Jackson. The justices, it appears, cannot evade the responsibility of dealing with the facts. In a case reported in the *Times* of May 21st, 1912, the justices convicted a father, under Section 12, of neglect to provide medical aid in the form of an operation for cleft palate. The High Court then refused to make absolute a rule *nisi* for *certiorari*, the question being simply one of fact for the justices. The latter have to consider the nature of the operation and the reasonableness of the refusal. It is all very well to argue that there is merely a choice between two remote contingencies, and that the parents, rather than the medical officer, should have the right to choose. The material for the decision must mainly be a matter of medical evidence. One thing to be taken into consideration by the justices, said Avory J. in Oakey *v.* Jackson, is whether the person who advises the operation is a qualified medical practitioner or merely some irresponsible person.

So stands the law, and arguments and comments must not ignore the law. In the last resort, of course, a parent might say, "I do not recognise the law and, sooner than allow an operation upon my child, I will go to prison." Conscientious objection may be a rule of conduct; it is not a legal defence. Before the Children Act was passed in 1908, there was an earlier statute containing something akin to Section 12. Under this earlier Act Robert Downes was prosecuted in 1875. His child had been wasting for some nine months from chronic inflammation of the lungs, and then died. The father belonged to a sect which never called in medical advice but called in the elders of their church to pray over sick persons. The Court held that, whatever doubts might exist as to a duty at common law to provide adequate medical aid, the statute left no doubt whatever. The statute, said Baron Bramwell, imposed an absolute duty upon parents, whatever their conscientious scruples might be; "the prisoner wilfully (not maliciously, but intentionally) disobeyed the law and the death ensued in consequence." Those who disagree to-day with the positive duty imposed upon parents by Section 12 of the Children Act are perfectly entitled to demand that the law be changed. It is doubtful if such an agitation will commend itself to an electorate to which a large feminine contingent has lately been added. Meanwhile, medical officers of health are equally entitled to draw attention to the existing law, and, in this respect as in others, to seek to educate the public in all health matters.

DONATIONS AND BEQUESTS.—Mr. Walter Kerr Fernie, of Thornton Hough, Cheshire, and of Liverpool, besides other bequests, left £1000 to the executors for such charitable institutions or objects and in such proportions as they may think fit, and £500 each to the Liverpool Royal Infirmary; the David Lewis Northern Hospital, Liverpool; the Royal Southern Hospital, Liverpool; the Stanley Hospital, Liverpool; the Royal Liverpool Hospital for Children; and the Neston Cottage Hospital.—Miss Mary Turnbull, of Nottingham, left £1000 to Nottingham General Hospital for the purposes of the superannuation fund connected therewith.—Mrs. Elizabeth Jane Reddaway, of Southport, among other bequests, left £500 each to St. Mary's Hospital for Women and Children, Manchester, to Henshaws Institute for the Blind, to the Northern Counties Hospital for Incurables, to the Hospital for Consumption and Diseases of the Chest, Manchester, to the Children's Hospital, Manchester, to the Christie Hospital, Chorlton-on-Medlock, to the Babies' Hospital, Slade-lane, Manchester, to the Manchester and Salford-street Children's Mission, and to St. Dunstan's Hostel.—Mr. Edward Masfen Arrowsmith, of Sydenham-park, left £500 to the Home and Infirmary for Sick Children, Lower Sydenham, S.E., and £500 to the Metropolitan Convalescent Institution (Seaside Branch).—Mr. Arthur Tyler, Oadby, Leicester, left £500 to the Leicester Royal Infirmary, £250 to the Leicester Guild of the Crippled Holiday Home, and £200 to the Leicester and Rutland Institution for the Blind.—Mrs. Elizabeth Wilson, North Shields, bequeathed £16,500 to the Tynemouth Jubilee Infirmary for additional buildings.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT CARDIFF.

REPRESENTATIVE MEETING: JULY 20TH–23RD.

THE annual Representative Meeting of the British Medical Association opened at the City Hall, Cardiff, on Friday, July 20th, with Dr. C. O. HAWTHORNE in the chair. The representatives were officially welcomed by the Lord Mayor.

Mr. A. H. Burgess, professor of clinical surgery in the Victoria University of Manchester, was elected President of the Association for 1929–30, and Dr. W. Harvey Smith, of Winnipeg, for 1930–31. Mr. R. G. Hogarth and Sir Robert Bolam were appointed Vice-Presidents, in recognition of their services as President and Chairman of Council respectively.

International Obligations.

Much discussion arose on a proposal that the B.M.A. should become a full member of the Association Professionelle Internationale des Médecins (A.P.I.M.), whose object it is to be an international union and bureau for the interchange of information and ideas on the social and political aspects of medical practice. The proposal had been rejected by the Council on the ground that membership would bring to the B.M.A. no advantages which would justify the annual subscription (£125) and the demands which would be made on the time of the medical secretary and his staff. The Council expressed its willingness at all times to furnish medical associations, national or international, with any information at its disposal, and several representatives said they thought this was sufficient evidence of the desire to help the profession in other countries. They pointed out that lack of funds already hampered expansion of the B.M.A.'s own work at home and that the expense of belonging to the A.P.I.M. might eventually reach £1000 a year, representing a very large capital sum. Medico-political problems, unlike those of science, were purely national, and must be settled nationally. The A.P.I.M. was young and had no prestige; to join at this stage would be a step in the dark. In answer to these objections it was argued that the purpose of joining might be to give rather than to receive. The new association could not thrive unless it was supported, and the B.M.A. had experience which would be really useful abroad. Membership of the A.P.I.M. involved no obligation to abide by decisions taken on the continent, nor did it commit the B.M.A. to expenditure beyond the subscription. The great need of the world was for international coöperation, and in point of fact there was much to be learnt from the ways in which other countries dealt with such problems as health insurance and the certification of the insane.

These last arguments carried the day, and the meeting instructed the Council to take the steps necessary to secure full membership of the A.P.I.M.

Radiotherapy by the Unqualified.

Mr. H. S. SOUTTAR, Chairman of the Science Committee, proposed:—

That the Representative Body express the following opinion, namely, that in view of the risks to the public involved in the use of electricity and radiation as methods of treatment by untrained and unqualified persons it is to be desired (1) that suitable courses of training should be organised under medical direction for persons who wish to administer this form of treatment; (2) that persons who have satisfactorily followed such a course should be entitled to have their names entered on an approved roll; (3) that one of the conditions attached to admission to, and maintenance on, the approved roll should be abstention from the treatment of any patient except upon the responsibility and under the general supervision of a registered medical practitioner; and (4) that patients who require electrical or radiation treatment should be referred only to those persons whose names are on the approved roll.

He put forward the motion because it was undesirable that the public should be misled by the absurdly optimistic claims made by institutions provid treatment by ultra-violet rays and electricity. On other hand, medical men wanted to be able to s their patients to places where suitable treatment this kind could be skilfully given.

Dr. J. F. WALKER thought it unwise that Association should set the seal of approval on a kind of unqualified practice. Could the line drawn at chiropodists or herbalists?—Dr. H. BRACKENBURY, Chairman of Council, answered t there could be no objection to the establishment register containing the names of persons competent do certain things, so long as they were prepared do these things only under the supervision direction of registered practitioners. The Associat would never have opposed the registration of optici had they not asserted the right to act as independ practitioners. The profession had to recognise this time of day that there were craftsmen capable doing things that medical men were not prepared t for themselves.

The motion was carried by a large majority.

Proprietary Medicines and Secret Remedies.

The meeting approved a motion by Lancashire Cheshire that the Council should "consider advisability of resuming the investigation into composition of secret remedies and the publicatio the results." It was pointed out that a very l number of patients were misled by specious advert ments in the daily press, and that there was a const stream of inquiries from doctors concerning the v of the preparations recommended. The Chairma Council said that the matter had lately been sidered, and it was thought that the cost migh prohibitive. The old publications could hardly re-issued in their present form, but if they were rev it must be done ab initio.

The meeting was more impressed, however, by J. D'EWART'S reminder that the expense of pub tion, and even of actions at law, might easily justified by what the Association would gain in public esteem by work so obviously useful.

The New National Health Insurance Act.

Dr. H. G. DAIN, Chairman of the Insurance Committee, said that the Minister of Health informed the profession that there was little in Insurance Bill that concerned their interests, but few words affecting them had proved to be important. The Act of 1924 had said that additi benefits should be administered by approved soci unless they were "in the nature of medical benef This clause was omitted from the new Act, an the same time new additional benefits had been i duced. He proposed the following resolution:—

That it is essential if the medical profession is to take in the provision of additional (medical) treatment be under the National Health Insurance Acts that these, the case of statutory medical benefit, shall be adminis in such fashion that the services of the medical profe who elect to give advice and treatment in connexion t with, shall not be under the control of any approved s or societies.

This was passed nem. con., and it was agreed the principle ought to receive statutory recogn and definition.

Dr. BRACKENBURY said that the new Act gav approved societies dangerously wider powers, these could only be exercised with the Minist Health's approval. The profession preferred prote by legislation to protection by consultation. The Act recognised two forms of additional benefit had been separated by an unfortunate accident. first was payment to a practitioner for treatme advice outside the scope of any other addi benefit or of medical benefit, under a special sc approved by the Minister for the purpose. The s was payment to approved charitable institutions clinics) for similar forms of treatment. By la approved society could adopt the second of without adopting the first and thus the positi

ecialists or consultants would obviously be pre-liced. The Minister had promised to do the most in his power to dissuade an approved society m taking such action, but if societies proved ractory a situation might arise in which the sociation would have to advise consultants and ecialists to take no part in a particular schemes.

Dr. E. R. FOTHERGILL (Brighton) expressed grave rs that specialists and consultants would lose ictice because the approved societies would tend make arrangements with hospitals and institutions, d after discussion the meeting unanimously epted his resolution instructing the Council to press the Ministry "the necessity for the adoption or proval of such regulations and schemes only as are conformity with the appropriate fundamental inciples," and to take such steps as may become cessary to unite the profession against accepting vice under any other conditions.

Periodical Examination of Insured Persons.

Dr. ELIZABETH CASSON, for Windsor, drew attention the value of regular medical examinations. The esent race of adolescents, who had been inspected roughout their school lives, were, she said, far althier than their predecessors, or than their ntemporaries from places where such examination s not done. A discussion followed in which one aker pointed out that regular examination—even thout fee—would profit panel practitioners by eping their patients away.

Mr. E. B. TURNER wished that approved societies uld be induced to look at things in terms of health d efficiency instead of £. *s. d.*, and the tendency of ne representatives to discuss the financial aspect was couraged by others who wished the meeting to press a general opinion for the information of the blic. The following motion was carried by a ge majority :—

That in the opinion of the Representative Body the ablishment of periodical medical and dental examination all persons insured under the National Health Insurance ts is urgently called for as an economic proposition, having ard to the return so to be obtained in health and productive ciency; that every such insured person, when accepted a patient on a doctor's panel, should be by that doctor dically examined and the result of that examination ced on record; that preliminary examination should ply also to dental examination, when that additional nefit is included and available under the National Health surance Acts.

Assistant Medical Officers in Mental Hospitals.

Dr. J. W. BONE, chairman of the Medico-Political mmittee, brought forward recommendations on the yment of assistant medical officers in mental spitals, as set out in the Council's report. These, said, represented an attempt to bring the 1915 ale up to date, and were submitted for general proval. The report received a good deal of criticism, pecially from Dr. PETER MACDONALD, who said that e proposals had not been discussed with the Royal dico-Psychological Association, and might have an fortunate effect on the present relations between e governing bodies of mental hospitals and their dical staffs. They would be taken as interference an outside organisation and if they were applied ght have the effect of levelling down salaries rather an levelling them up.

These views gained some support, but the Council sceeded in getting the general approval it asked for e proposals, on the understanding that the recom-ndations did not become part of the policy of the sociation until there had been further negotiations h the bodies concerned.

Paying Centres for Infant Hygiene.

Dr. BONE reported that a deputation had waited on the Council from the Association of Infant lfare and Maternity Centres, and the Babies ub at Chelsea. The deputation said that there was strong feeling that the mothers of the middle-class blic should be able to get that guidance and truction which is provided by the municipal and child welfare clinics for poorer mothers. Many private practitioners, it was considered, were unable or unwilling to give the kind of instruction required, and there were advantages in having the instruction given at a centre by a doctor who had given special attention to this branch of medical work, assisted by a fully trained nurse. The Council believed, said Dr. Bone, that the ideal was that mothers should be able to look with confidence to their own family doctor for the guidance required, but he thought it was no use to say that there ought to be no such centres as the one proposed. They already existed, and they would be set up in increasing numbers. The Council had been asked to say what were the right lines for their conduct and therefore put forward a resolution saying that the education of mothers was desirable, that there were already means by which it could be partially attained, that the further establishment of paying centres should be for the purpose of education and health propaganda and not for treatment, and that mothers preferring to avail themselves of the centres should do so with the knowledge of the family medical attendant.

The Council made several other recommendations on the subject, but opposition from representatives prevented their being considered.—Dr. FOTHERGILL and Mr. E. B. TURNER attacked the principle of countenancing clinics for people who could afford to have a doctor of their own.—Dr. J. W. JOHNSON said that young mothers were more and more seeking the aid of practitioners concerning the upbringing of children, and there was no excuse for lending aid to a misguided scheme of this kind.—Dr. E. A. STARLING deplored the extension of the "wave of clinics" from the poorer classes to the richer.—Dr. JOHN STEVENS thought that such a scheme must lead to overlapping and friction between clinics and practitioners, and Dr. A. B. MURRAY said that "if we're not fit to look after the children it's an end to private practice."

The Council's policy was supported by Mr. BISHOP HARMAN, Dr. DAIN, and Dr. BRACKENBURY.—Dr. CHRISTINE MURRELL suggested that not very long ago the proposal to establish infant welfare clinics for the poor had been looked at askance by the Representative Body; was there not a danger of opposing anything new, because it was new?

Dr. L. W. BATTEN spoke convincingly on the demerits of work at clinics, of which he claimed experience, and amid enthusiasm the meeting passed the following resolution, which represented the view of the Council in 1917 :—

That while it fully appreciates the value of any educational work proposed to be undertaken at paying centres for middle-class mothers in the way of giving lectures on infant management, it does not approve of these centres providing consultations and advice in respect of mothers and young children belonging to classes of the community who are quite able to consult their own family doctor.

Maternal Mortality and Morbidity.

On a report brought forward by Sir EWEN MACLEAN, as chairman of a special committee, Dr. DAIN said he was specially impressed by the fact that better organisation would bring about a big reduction of puerperal mortality and morbidity. The report showed that three-quarters of the mortality could be done away with by measures of organisation alone, and the success being attained by certain workers in the slums of large cities ought to be available for the ordinary woman. The same view was reflected in speeches by Dr. JAMES YOUNG (Edinburgh) and Dr. R. C. BUIST (Dundee) who proposed that the Council's recommendations should be amended to include a resolution—preceding the others because of its importance—"that such immediate steps be taken as will ensure full and cordial coöperation between doctor and midwife." This was approved by the meeting, in conjunction with the following recommendations contained in the report :—

(2) That steps should be taken to determine by further experimental research: (*a*) The factors which constitute and the conditions which vary resistance to disease, particu-

larly as regards pregnancy and the puerperium. (*b*) The best specific prophylactic measure to employ for the prevention of infection by *Streptococcus pyogenes*. (*c*) The length of time required to acquire such immunity and the degree and duration of such immunity. (*d*) The therapeutic value of specific as opposed to antiseptic measures in the treatment of septicæmia caused by *Streptococcus pyogenes*.

(3) That increased facilities should be provided for training medical students with special reference to antenatal work.

(4) That a condition of the payment of maternity benefit under the National Health Insurance Acts should be that the mother has had at least one antenatal examination by a qualified medical practitioner during her pregnancy.

(5) That members of the medical profesion should be encouraged to keep regular and careful records of their midwifery cases.

(6) That there is need for further provision of beds specially set aside for maternity cases in institutions. That every maternity home should provide for the complete isolation of septic cases.

(7) That the Association should consider the allocation of additional grants to promote research into the problems raised in this report, including especially the questions raised in the first recommendation of this report.

(8) That a Committee with adequate representation of practitioners be set up to formulate measures designed to bring about reduction in puerperal morbidity and mortality rates, to keep in touch with research work, and to assist divisions and branches of the Association in arranging for education and propaganda with regard to the value of antenatal service, the method of dealing with confinements, and the post-partum care of the mother and care of the infant.

Dr. BRACKENBURY, as a Direct Representative on the General Medical Council, said that the Council had been investigating allegations about the inadequate training of medical students in midwifery. The replies received from teaching institutions had almost all been satisfactory, and neither the public nor the profession need be under any anxiety. All medical students were having full opportunity for training in this sphere and were liable to a complete examination. There was no excuse for saying that the registered practitioner passing through the present régime was not fully trained for undertaking antenatal work, and there was no case for taking the matter out of the hands of the private practitioner.

In the consideration of this subject a certain amount of discussion arose between representatives who thought that the ideal midwifery service consisted of midwives assisted by specialists, and those who regarded the general practitioner as the proper person for the conduct of labour.

Payment for Ambulance Lectures.

Dr. PETER MACDONALD explained that at York the profession tried to carry out the B.M.A.'s policy that ambulance work is a matter of business and not of philanthropy. They had found, however, that elsewhere in the country medical men gave their services for nothing or for an honorarium. This was confirmed by other representatives who told of "blacklegging" by doctors. It was impossible, they said, to get the fee of one guinea for each lecture—a legitimate fee in view of the trouble involved in keeping up with the handbooks—so long as medical men were willing to accept presentation walking-sticks or railway vouchers instead of their rights. Dr. MILNER MOORE, who confessed, at the age of 88, that he had never previously addressed the Representative Body, strongly urged that the Association's policy should be maintained and observed, and this proved to be the opinion of the meeting as a whole.

Compulsion in the Treatment of Venereal Disease.

Dr. DAVID LEES, for Edinburgh and Leith, proposed a motion stating that it was essential that further power should be given to practitioners and local authorities "with a view to strengthening the voluntary system by placing a 'compulsitor' on all persons infected with venereal disease in order to secure the submission to treatment and continuance under treatment of such persons until discharged by a registered medical practitioner." In England, he said, 63 per cent. of the known cases of venereal disease failed to complete their treatment; in Wales the percentage was 45 and in Scotland 51. In face of th could anyone say that the present schemes we successful? Few clinicians would say that we we stamping out syphilis; none would say that we we lessening gonorrhœa. The reasons were two—ignc ance and carelessness. It was the duty of the profe sion to dispel ignorance and the duty of the State discourage carelessness. The plan of a compulsit as approved by every local authority and medic officer of health in Scotland did not infringe the liber of any subject who deserved liberty. It only infring the liberty of the libertine.

Mr. BISHOP HARMAN thought that compulsi would drive the disease underground where it wou be even more destructive than at present, but M E. B. TURNER, who said he had spent a large part his life in the fight against venereal disease, havi addressed 987,000 people on the subject, commend the trial of a compulsitor in selected districts, proposed by Edinburgh, and recommended in t Trevethin Report. Dr. GRAHAM LITTLE, M.P., on t other hand, thought it useless to try compulsi locally. People would change their place of residen and in any case defaulting was the least important the problems of syphilis. The wholly untreat patient was the real danger to the community, r the patient whose infectivity had been reduced beginning a course of treatment. Dr. BRACKENBU also maintained that venereal disease could not possib be dealt with by local option; he would rather compulsion over the whole country than in limit areas, but Dr. LEES explained in his reply that t area covered by the Edinburgh scheme extend almost from the Forth to the Border, which mad change of dwelling, especially in this time of hous shortage, an impossibility for most patients. T percentage of defaulters at his own clinic was o 26—the lowest in Scotland and perhaps the low in the country as a whole. The Representative Bo by passing the resolution, would set a very necessa example to Parliament, some of whose medi Members had ideas on venereal disease some 20- years out of date.

The motion was lost by a considerable majority

Miscellaneous Topics.

An unsuccessful proposal by South-West Wales t the Council should try to secure for the professio supply of petrol (or its homologues) at commercial ra led to the statement that many garages are will to make this arrangement with practitioners. RICHARD LUCE said that medical M.P.'s had deci that it would be undesirable to ask for privileges the profession as regards the new petrol tax.

The Representative Body decided—

"That it is undesirable that chiropodists should recognised in a special register as such register would con to the public that chiropodists were competent to undert the diagnosis and treatment of diseases of the feet."

A suggestion was put forward that the ann representative meeting should in future be held London, to deal with medico-political questions that the business of the annual meeting held various centres could be restricted to scientific social work and enlarged in scope. But the mot inviting the Council to consider this plan was lost a large majority. The same fate met proposals reduce the annual subscription to two guineas, to investigate the possibility of establishing a c pulsory scheme of life insurance for all members the Association.

A further account of the deliberations of Representative Body will be published in a com issue of THE LANCET. In the course of the proceedi it was announced that Dr. Hawthorne had b re-elected chairman for the coming year and that Arnold Lyndon had been elected deputy chairma

QUEEN ALEXANDRA MEMORIAL.—It is announ by the Queen Alexandra National Memorial Commi that, when the fund was closed at the end of June, the t amount received exceeded £233,000.

Public Health Services.

EPORTS OF MEDICAL OFFICERS OF HEALTH.

CITY OF GLASGOW.

THE discrepancy between the local estimate of e population and that of the Registrar-General now considerable, and some of the statistics for 27, from both points of view, are here given.

City of Glasgow (population mid-year).	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality from childbirth.
ocal estimate.. (1,130,675)	20·9	13·7	1·14	1·33	2·5	1·6	107/36	14·4	6·6
-G.'s estimate. (1,049,000)	22·4	14·6	1·23	1·43	2·7	1·8	107/36	14·4	6·9

Dr. A. S. M. Macgregor's report, a volume of 381 ages, besides an account of the work of his depart-ent and the usual statistical tables, contains special ctions dealing with overcrowding, the rehousing for nants under slum-clearance schemes, the incidence cancer, results of artificial light treatment in berculosis and rickets, a study of puerperal fever Belvedere Hospital, and an inquiry into the cidence of the non-pulmonary forms of tuberculosis.

Pneumonia and Tuberculosis.

The attempt to provide hospital accommodation r pneumonia, measles, and whooping-cough was ade difficult by an unusually high incidence of phtheria, but the difficulty was relieved by the ompt coöperation of the poor-law authority in lmitting patients suffering from pneumonia at mes of pressure. Since the municipal hospitals ened their wards to pneumonia, there has been increased demand and the general hospitals have pparently restricted admission of such patients.

The cases of pneumonia notified during the year numbered 52 and the percentage admitted to municipal hospitals as 58. Pneumonia, says Dr. Macgregor, is very apt to erroneously notified and has become a somewhat loose d ill-defined term. In the case of secondary pneumonias e primary cause is often omitted from the death certificate, d this makes it difficult to study the causes which lead to high a prevalence of respiratory disease in young children. considerable number of children are sent to hospital for eumonia who are found to be suffering only from slight tarrh and thus occupy hospital beds to the exclusion of ore urgent cases. As an example of the severity of acute imary pneumonia, a case mortality-rate of 26·3 per cent. cited for 5334 children under 5 years of age, admitted to spital during the last seven years; under 1 year the case ortality-rate reaches 40 per cent. The death-rate from l forms of pneumonia appears to have increased during e last 70 years, and recent studies suggest that over-owding and poverty have a greater influence on this ath-rate than meteorological conditions.

The death-rate from pulmonary tuberculosis has eclined steadily from 1·43 in 1913 to 0·86 and 0·84 1926 and 1927. At the request of the Scottish oard of Health treatment with Ruppel's serum was vestigated, but the serum did not fulfil expectations. here has been a great fall in the mortality from non-lmonary tuberculosis.

Since the quinquennium 1901–05, the rate from tuber-lous meningitis has fallen from 319 per 1,000,000 to 142; at from abdominal tuberculosis from 301 to 60, and that om other forms of non-pulmonary tuberculosis from 258 99. Tuberculous disease of bones rarely leads to amyloid sease nowadays. During May the 4567 cases of non-lmonary tuberculosis on the register were reduced to 2811 by writing off: (1) those not suffering from tuberculosis; (2) those who had had no active disease for two years; and (3) those of whom there had been no information for two or more years. The residue included 299 under 5 years, 1311 from 5 to 15 years, and 43 over the age of 15. Of the total of 2811 43·3 per cent. suffered from tubercle of bones and joints, 25·5 per cent. from the glandular and 18·2 from the abdominal type. A further analysis showed that tubercle of bones and joints constitutes over 40 per cent. of the cases at the three age-periods mentioned, while the percentage of abdominal tubercle was 35·5 per cent. under 5 years, 23·6 from 5 to 15, and 8·1 over 15, and the glandular form constituted 14·4 per cent. of the cases under 5, 25·8 of the cases under 15, and 28·1 of the cases over 15.

The bone and joint cases are those which require prolonged institutional provision. Of 438 bone cases, 241 suffered from spinal disease. Of the 450 joint cases 205 suffered from hip disease and 127 from knee disease. The figures as regards abdominal tuberculosis are given with some reserve owing to doubt as to the diagnosis.

Owing to housing conditions, institutional treatment is often required until the patient is cured. Thus, of the groups of 2811 patients just analysed, 20 per cent. lived in 1-apartment, 62 per cent. in 2-apartment, 13 per cent. in 3-apartment, and 4 per cent. in 4-apartment houses, and upwards. In 1 per cent. there was no information.

The conclusions of Dr. T. McGowan, from the treatment of tuberculous children with ultra-violet rays at Ruchill Hospital are that the rays have a stimulating effect on all children, but that the reaction in tuberculous cases is greater, and takes the form of an auto-inoculation. Immediately after treatment there is a slight fall in weight and a marked and sustained increase in pulse-rate. The auto-inoculation is proportional to the dosage, and so long as it is not excessive produces beneficial results.

Other Infections.

Influenza was less fatal than in 1926; the mortality from scarlet fever was less; and diphtheria, in spite of increased prevalence, caused a lower death-rate.

A milk-borne outbreak of paratyphoid fever of a mild type gave rise to 67 known cases in August and September, and caused two deaths of young children already debilitated by measles. A follow-up of the 517 survivors from attacks of encephalitis lethargica shows that 245 are fit for work or school, although 104 show minor sequelæ; that 47 are unfit for school; and that 225 are unfit for work, of whom 160 are of the Parkinsonian type, 35 are mental hospital cases, and 30 show other effects. The three years' period for the notification of whooping-cough expired on July 10th, and the notification was not renewed, but visitation by nurses is being continued.

Antenatal Supervision.

During 1927 919 cases were admitted to antenatal wards of the Royal Maternity Hospital as compared with 866 in the previous year. The antenatal dispensary of this hospital was attended by 4267 expectant mothers, and the ten other antenatal centres by 2068. The total births numbered 23,578. Nearly half the expectant mothers attended before the seventh month of pregnancy.

Venereal Diseases.

Among the 47 gonococcal cases of ophthalmia neonatorum there was no damage to eyesight, and among the 358 non-gonococcal cases there was one case of impaired vision of one eye. A plan is given of the new clinic for venereal diseases, opened in October at Black-street, which has relieved the pressure on the Broomielaw dispensary. A table shows that 50 per cent. of the men under treatment for venereal disease and 10 per cent. of the women ceased to attend before completing a course of treatment, and that 3·6 per cent. of the men and 17·5 per cent. of the women failed to submit to the final tests after the completion of the course. Meetings have been held of the local authorities in the West of Scotland and, on March 22nd, 1928, the terms of a Bill for dealing with defaulters was approved at a final conference.

Housing.

The new houses completed during 1927 numbered 5183, compared with 6796 for the previous year, both figures being a considerable advance on former years. For many years it has been impossible to put in operation the statutory powers for the prevention of overcrowding in the 18,000 "ticketed" houses. The most that can be done is to prevent gross overcrowding of one house by two families. The overcrowding in the "ticketed" houses is round about 15 per cent., and when this figure falls it will be an indication that the housing shortage is being overtaken. The crux of the housing problem is the provision of houses at a rental which the working classes can afford. A provisional order is to be obtained for the better supervision of the rehoused tenants. Reports of various rehousing schemes show that about 10 per cent. of the tenants are dirty in spite of repeated warnings. It has been found, by experience, that a considerable improvement can be effected through systematic and sympathetic supervision by nurse-inspectors, and it is proposed to extend this scheme of visitation. During the last five years four slum-clearance schemes have been initiated, involving 5110 houses. Of the latter, 2068 have been demolished, 287 are closed, and 2755 are still occupied. An attempt is being made by power obtained under a local act to control and limit the excessive rentals charged for furnished houses let in tenements.

Bacteriological and Analytical Work.

From the report of the city bacteriologist, Dr. R. M. Buchanan, we learn that 42 cheap shaving-brushes were examined for anthrax with negative results, but that some of the goat-skin thongs used as binding for orange-boxes have given positive results. Of 202 milk samples examined for tubercle two were positive. Dr. Buchanan is of opinion that the tubercle bacillus cannot be satisfactorily identified by the microscopical test, but that animal inoculation is necessary for its detection. During the year 27 milks showed acid-fast bacilli, some of which were indistinguishable microscopically from the tubercle bacillus, and all of which were proved by inoculation to be non-pathogenic. Of 205 samples of designated milk, 189 reached the standard and 16 failed. In certain pasteurised milks, non-sporing cocco-bacilli, or streptococci, have been found, the growth of which appears to have been favoured by the high temperature of pasteurisation. A considerable amount of work has been done with regard to fungoid diseases of fruit, illustrations of which are given in the report. A small outbreak of irritant poisoning, apparently due to eating tinned apricots, appears to indicate that contamination with tin varies according to the quality of the tinplate and the time which has elapsed since canning. The Scottish Board of Health, however, has not felt justified in issuing regulations requiring the date of canning of foodstuffs to be recorded on the container.

The regulations with regard to preservatives in food are said to be working fairly satisfactorily, but butchers in the habit of using a chemical substance known locally as "Madame Rachel" to maintain the bloom of mince have proved somewhat recalcitrant.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 14TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 177 (last week, 182); scarlet fever, 1695; diphtheria, 919; enteric fever, 38; pneumonia, 747; puerperal fever, 33; puerperal pyrexia, 109; cerebro-spinal fever, 7; acute poliomyelitis, 12; acute polio-encephalitis, 1; encephalitis lethargica, 15; dysentery, 7; ophthalmia neonatorum, 106. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 21 counties:—London, 3; Bedford, 2; Buckingham, 1; Derby, 16; Devon, 1; Dorset, 1; Durham, 39; Lanc 6; Leicester, 4; Northampton, 3; Northumberlanc Nottingham, 6; Soke of Peterborough, 2; Stafford Surrey, 1; Warwick, 1; Yorks, East Riding, 20 (Kin upon-Hull); North Riding, 3; West Riding, 30; Glam 9; Monmouth, 8.

The number of patients in the Infectious Hospitals Metropolitan Asylums Board on July 17th–18th w follows:—Small-pox, 27 under treatment; scarlet 1759; diphtheria, 1856; enteric fever, 17; measles, whooping-cough, 172; puerperal fever, 22 (plus 18 ba encephalitis lethargica, 66; poliomyelitis, 1; "diseases," 27. At St. Margaret's Hospital there 23 babies (plus 16 mothers) with ophthalmia neonato

Deaths.—In the aggregate of great towns, incl London, there was no death from small-pox, from enteric fever, 27 (3) from measles, 6 (0) scarlet fever, 29 (7) from whooping-cough, 2 from diphtheria, 40 (10) from diarrhœa and ent under two years, and 24 (5) from influenza. figures in parentheses are those for London itself

The two fatal cases of enteric fever were reported Bath and Worcester. Of the 24 fatal cases of m outside London 9 were reported from Liverpool and 3 Burnley. Of the 22 fatal cases of whooping-cough o London 4 each were reported from Birmingham and pool, 3 from Manchester. In the same week Gl reported 10. Fewer deaths from diarrhœa are rep this week than in the two last.

The number of stillbirths registered during the was 297 in the great towns (corresponding to a of 42 per 1000 births), including 52 in London.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

IT is officially announced that the title of the Dir General of the Medical Department of the Navy has altered to "Medical Director-General of the Navy."

To be Surg. Lts.: F. Dolan and F. G. V. Scovell.

The following are notified: Surg. Lt. A. R. Ewa *Columbine.* Surg. Lt. (short service) J. J. Keevil t ferred to permanent list. Surg. Lts. (D) T. Hunt to for R.N. Barracks, Devonport; and S. E. Brown to *Def*

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. R. B. Ainsworth is apptd. a Professor at the Med. Coll., vice Lt.-Col. (Bt. Col.) P. H. Henderson, vac

To be Bt. Lt.-Col.: Maj. E. T. Potts.

To be Bt. Col.: E. A. Walker, I.M.S.

To be Bt. Maj.: Capt. T. M. Layng, 3/9th Jat. R.

Temp. Lt. M. Clayton-Mitchell relinquishes his co and resumes the rank of Capt.

ARMY DENTAL CORPS.

Lt. C. E. Day to be Capt.

SUPPLEMENTARY RESERVE OF OFFICERS.

A. N. T. Meneces to be Lt.

TERRITORIAL ARMY.

Maj. G. F. R. Smith to be Lt.-Col. and to commd 164th (W. Lan.) Fd. Amb.

Maj. W. L. R. Wood resigns his commn.

Capt. T. D. Overend resigns his commn.

Capt. C. B. Jones to be Maj.

Lts. R. K. Wilson (R.A.M.C. Res. of Off.) and H. Gregory (late R.A.M.C., Spec. Res.) to be Lts.

J. G. Weston and H. A. Bulman to be Lts.

ROYAL AIR FORCE.

The undermentioned Flying Officers are promoted t rank of Flight Lt.: J. O. Priestley and J. Twohill.

RESERVE OF AIR FORCE OFFICERS.

Flight Lts. relinquishing their commissions on pletion of service: T. A. G. Hudson and C. H. B. Thomp

INDIAN MEDICAL SERVICE.

Capts. P. A. Dargan, C. Mac D. Nicol, and L. Blak be Majs.

Lt.-Col. E. W. Browne retires.

Correspondence.

"Audi alteram partem."

CARDIAC CLINICS.

To the Editor of THE LANCET.

R,—Considerable difference of opinion has been essed recently in your columns as to the pre-osing factors in rheumatism. Dr. Reginald er thinks [1] that "the environmental factors at k (of which damp and cold are the most important) t to some extent centre round the production of ase-infected tonsils." Dr. W. C. Vining writes: [2] Leeds I found nothing to support the belief that p plays an important part in arousing the matic infection to activity." He does not ve that infected tonsils are an important factor, regards the effect of diet as paramount. The way of deciding between them is to obtain and pare figures collected from all the main centres opulation in the British Isles.

ast year I was fortunate enough to be closely ciated with the formation of a children's cardiac c at the Johns Hopkins Hospital, Baltimore. paratory to this I had inspected all the main cs of this nature in New York, Boston, New en, and Philadelphia. A fallacy has grown up England that rheumatism is almost unknown in erica, probably due to the fact that American sicians coming from the Southern and Western es, where the disease is rare, are always demanding e shown rheumatic nodules in London hospitals. does not apply to the Northern States, and New k claims nearly as much rheumatism as London. uch is this the case that a definite effort has been e to study the disease by means of an elaborate nisation centred in New York with cardiac cs allied to it all over the country. In these the s are taken on special forms, carbon copies of h are sent to the headquarters in New York.

he most perfect of such clinics for children is ably that of Dr. May Wilson, at the Nursery and ds Hospital, New York, where a clinic of 500 dren has been in existence for nearly ten years. notes are taken on the special forms mentioned, the children classified into five groups:—

Able to carry on habitual physical activity.
a. Able to carry on with slightly diminished physical activity.
b. Able to carry on with greatly diminished physical activity.
c. Symptoms of heart failure at rest.
d. Abnormal signs and symptoms.
Potential heart disease (uncomplicated chorea, &c.).

classification is based on a careful history and ical examination, combined with a fluoroscopic ng of the heart, the vital capacity, exercise tests, in some cases electrocardiograms and leucocyte ts. Controversy has raged over the value of tests, and from my own work which, in my ion, is but relative, the tests being of little use if rmed on a single occasion. In the case, for nce, of two children of the same age and size, who eventually classified in the same group, one may a different normal vital capacity than the other. tests are, however, of great assistance in judging any one case is progressing. If a child is going hill, or if reinfection has taken place in an old although the weight, temperature, pulse, and ical signs may show little change, the vital city will usually fall at once, the heart will show nger interval before it returns to normal after ise, the leucocyte count will rise, while the oscopic tracing will often show a slight dilatation percussion has failed to demonstrate.

These clinics are of inestimable value to the child who is under the constant care of the same physician over a number of years, and eventually handed on to an adult clinic with a complete clinical history. At the same time the clinics amass statistics which are easily examined. Dr. Wilson, for instance, has shown that tonsillectomy has little or no beneficial effect on chorea, and only slightly more on other forms of rheumatism; that rheumatism is not confined to the very poor, but is common in the children of the artisan class. Surely, if a system of clinics, modified to suit the conditions, were established in all the great medical centres of this country, where rheumatism is so universal, and its clinical interpretation so generally understood, it should be possible to amass such a vast number of figures, that the problem of predisposing factors could rapidly be settled. If at the same time these clinics were in close touch with laboratory research, it is not too much to hope that the great problem of what is the infecting agent, which has baffled the profession for so long, might at last be cleared up, and a new era inaugurated for the treatment of the disease.

I am, Sir, yours faithfully,

W. ROBERT F. COLLIS, M.B. Camb., M.R.C.P.,
late Temp. Assistant Physician, Johns Hopkins Hospital.
July 14th, 1928.

[1] THE LANCET, May 19th, p. 1005.
[2] Ibid., p. 1017.

RESULTS OF SURGERY IN CARCINOMA OF THE CERVIX UTERI.

To the Editor of THE LANCET.

SIR,—I should be much obliged if you would allow me to correct the figures appearing in the report of the remarks I made last week at the International Conference on Cancer in your last week's issue (p. 142). These figures should read:—

Up to the end of 1927 he had performed Wertheim's operation 351 times. There were 53 deaths due to the operation—an operative mortality of 15·1 per cent. Of the 298 patients who survived the operation, 139 had died of recurrence, and of the remaining 159, 13 had died of other disease, of whom 6 survived over 5 years (3 survived over 10 years) and 30 had been lost sight of, 17 after they had passed the 5-year limit (5 had passed the 10-year limit), and there were 116 patients whom he was still in touch with. Of these latter 64 had passed the 5-year limit (35 had passed the 10-year limit), whilst the remaining 52 had been operated on at periods less than 5 years ago. In all, then, 87 patients had survived the operation 5 or more years, 43 of whom had survived it 10 or more years.

I am, Sir, yours faithfully,

VICTOR BONNEY.

Devonshire-place, W., July 24th, 1928.

DIPHTHERIA CARRIERS.

To the Editor of THE LANCET.

SIR,—I was much interested in Mr. Yearsley's letter on the occurrence of Klebs-Löffler bacilli in the cavity of a decayed tooth. I came across one such instance myself during my investigation on diphtheria carriers. The case was, briefly, as follows:—

A boy of 5 years of age had shown persistently positive throat and nose cultures for several months. He had very decayed teeth, and it was thought that these might be acting as foci for the growth of K.L.B. Cultures were taken from the gums around the base of six of the most decayed teeth. Yeasts were obtained from all of the teeth sockets, and, in addition, K.L.B. were obtained from the region surrounding a decayed right upper incisor. These decayed teeth were all removed, but the throat and nose cultures still remained positive, and the child did not clear up until he was put on nasal douches.

I did not allude to this case in my article, as I regarded the occurrence as too rare to be of practical importance.—I am, Sir, yours faithfully,

WM. CLUNIE HARVEY.

Borough Sanatorium, Brighton, July 22nd, 1928.

THE MAINTENANCE OF ORPHANS OF MEDICAL MEN DURING THE HOLIDAYS.

To the Editor of THE LANCET.

SIR,—The applications for assistance from the Royal Medical Benevolent Fund have in recent months been exceptionally numerous and urgent. A special plea which appears at this time of the year is for help for children. In coöperation with our Ladies' Guild and other bodies the Committee of this Fund is often able to secure admission of children of deceased medical practitioners to orphanages or schools where free education is given.

During the holidays provision must be made for these children, and when there are no friends or no friends in a position to receive them, the difficulty is great. The Committee does what is possible, but their efforts are much hampered by the lack of funds. Further subscriptions and donations will be gratefully received at 11, Chandos-street, Cavendish-square, London, W.1.

I am, Sir, yours faithfully,

July 23rd, 1928. THOS. BARLOW, President.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

CRITICISM OF HOME OFFICE ADMINISTRATION.

ON July 11th the House went into Committee on a vote of £283,588 for the salaries and expenses of the Home Office, Mr. J. F. HOPE (Chairman of Committees) being in the chair.

Factory Inspection.

Mr. RHYS DAVIES moved to reduce the vote by £100. He said that he did not think there was a better test of the efficiency of the Home Office than the number of accidents to workpeople in the factories and workshops of the country. In 1926 there were 139,963 accidents of that kind of which 806 proved fatal. In 1927 the number had reached the colossal figure of 156,974, of which 973 proved fatal. That was to say, that there was an increase in one year of 17,011 in the total number of accidents and of 166 in the number of fatalities. The Home Office had issued a circular dated May 16th, 1927, to employers stating that the Home Secretary had been much concerned to learn from the Chief Inspector of Factories that progress in the development of "safety first" arrangements in factories continued to be disappointingly small. The need of such an arrangement in industry elsewhere was great. The total number of accidents reported in the Factory Department showed no sign whatever of any substantial reduction. That circular showed that the Home Office was fully aware of what was happening in regard to the alarming growth of accidents in factories and workshops. He would not say a word against the personnel of the inspection department of the Home Office, but he felt sure that there was a distinct relationship between the number of accidents on the one hand and the number of inspectors employed and the number of visits paid to factories and workshops on the other. In 1914 there were 222 inspectors; that number has dwindled since until at the end of March, 1928, the number stood at only 206, or a decrease of 16. While the best employers no doubt did their duty according to the rules and regulations issued by the Home Office, there were some employers who paid no heed to the law in this respect and did all they could to escape their responsibilities. He urged that there ought to be an increase in the number of factory inspectors, and more women inspectors ought to be employed. He was delighted that the Home Office had instructed Sir Malcolm Delevingne to deliver a speech at Geneva in favour of a "Safety First" Convention, but it was very little use asking for an international convention in favour of the prevention of accidents when this country was not doing all it could in that direction on behalf of its own workpeople. There was another point which he would like to raise. In 1926 Parliament passed an Act prohibiting the use of white lead in painting for interior purposes. The time had arrived when they ought to know the results of the operation of that Act. He was a little alarmed at the figures relating to lead poisoning generally. In 1922 the number of cases reported to the Home Office was 247 with 26 deaths. The number grew until in 1924 it reached a peak figure which was very alarming in The number of deaths in 1927 was reduced to 14, bu reported cases numbered 249 for 1927, or an increa 2 over 1922. With regard to lead poisoning among l painters the figure in 1922 was 40 cases with 12 de but in 1927 there were 98 cases reported and 21 de That was indeed an alarming state of affairs. He v like to know how many offences had been notified unde 1926 Act and how many convictions had been obta In 1924 a Committee was appointed to inquire into art humidity in textile and non-textile factories, and he v like to know what had become of the recommendatio that Committee. A great many of these difficulties v have been cleared away if the Government had carrie its promise to pass a Factory Bill. It seemed to him the Home Office ought to deal at once with the questi humidity in textile factories because the mortality sickness figures of some of the approved societies cov textile operatives were really alarming, and some o diseases shown in the statistics were attributable in he understood, to excessive humidity in these factories was pleased that the number of new cases of m nystagmus was apparently declining. In 1908 the new were 386, in 1914 3218, and in 1926 1771. He woul to know what means were being taken to prevent disease spreading and to deal with it better unde Workmen's Compensation Act. He understood tha Home Office was already conducting an inquiry into sili and he could assure the Government that it was high that something was done. The problem was urgent be of the increased suffering among coal-miners from disease. In 1922 there were 45 cases of anthrax rep to the Home Office and five deaths, and he was pleas say the figures had declined in 1927 to 31 and 2 respect The Home Office had appointed a Committee to inquir the cost of disinfecting East India wool, which was largely responsible for a number of anthrax cases i country. He was told that cases had occurred in Bermo where men had contracted the disease from hides and He wished to ask whether all these materials could r disinfected before leaving the port of origin. What w international position in this matter? He would s conclusion, that it was not good enough that in enlightened days, when they had a much better m service and better safeguards in factories and work that they should have to register 17,000 odd accide 1927 over 1926.

Certifying Surgeons.

Mr. HOLLINS complained of the cumbersome m which surrounded the operation of the Workmen's pensation (Silicosis) Act of 1918. The Act could on applied to those industries which made application a which the Home Office made an Order. Committees l be appointed and investigations made, and the gr difficulty was the obstructive methods which cou adopted either by the employers' representatives workers' representatives. In the three industries wh to the present had been before the Home Office ir there was only one happy result. Owing to this cumbe machinery and the waste of time involved in obtaini Order, a very meagre fraction of the total number of w affected had been brought under the scheme since th was passed. The only proper method was to hav disease scheduled as an ordinary occupational d Lead poisoning was a cumulative disease and one neve when the effect would show itself. Persons had symptoms of the disease several years after they ha the lead process, and because of the lapse of time sinc had worked the process they could not make a cla compensation. He would urge that if the Home could not extend the limit of time indefinitely during a lead process worker could make such a claim it at any rate, to be extended to a period of three or five The present method of appointing certifying surgeon not a proper method. The best men might be appo but they were not appointed because they were exp lead poisoning, silicosis, or anthrax. In the pottery in they were paid 1s. per examination, with the resul cases had been known where 20 workers had passed the certifying surgeon in as many minutes. It was imp for anybody to make an examination of workers in s a period of time. Certifying surgeons should be whol men without private practice. This had been tried Refractories Industries scheme when the tuberculosis made the examinations in the first instance. After permanent full-time men were appointed and it was that the examinations were more efficient and the more valuable. He hoped that the Home Sec would give his attention to the three points h raised.

Mr. MACKINDER said as one connected with the trade he wished to emphasise what had been said reg the insufficient staff of factory inspectors. He ha

1914 until last year a member of the Departmental nittee on Anthrax. In 1927 19 cases from wool were ted, three from horsehair, nine from hides and skins, one from other industries. He would like to know how of these cases were fatal and how many non-fatal. id not know whether it was possible—he hardly thought s—to disinfect the hides in the country of origin, but as quite certain that it was possible to disinfect the in the country of origin. He knew that the number of of anthrax was largely decreased as the result of the ation of the very fine Government disinfecting station verpool, but that only dealt with Persian and Egyptian , and there were any number of dangerous wools. e was goat hair and camel hair which were also dangerous. would like the Home Office to interest itself in the ection of the material used in the production of shaving-hes. He did not know whether the Home Office was e of the tremendous danger that the public were ing from the use of shaving-brushes made from what was d Chinese tail, or mane hair, which was a material e to be infected with anthrax. It reached this country roundabout way and was made into the cheapest ation badger hair shaving-brushes, from which it was easy to get this dangerous and loathsome disease. Departmental Committee proved that it was possible t these brushes and materials disinfected and made safe.

A Second Ministry of Health.

eut.-Colonel FREMANTLE said that the latest figures regard to lead poisoning given in the report for 1926 certainly disconcerting. It was true that there were r cases, but there were something like double the number eaths from lead poisoning in the last year reported upon mpared with the previous year, and that was a matter h needed to be cleared up. It was no doubt too early to definite information as to how far the Act of 1926 had n effect; but if the Home Office could give them any mation they would be glad to have it. The general of the 1926 Act was to prohibit painting by women and g persons and to give power to the Home Secretary to regulations. That he thought was the right method. bjected to prohibition wherever it was possible to avoid They wanted to work up as much as possible the question lucation and inspection. The factory inspector was one ie most valuable administrators and forms of education. they could not expect to get efficient inspection when inspectors came from a distance. They must delegate people who were on the spot, who could drop in and see things were going on. There was already a certain unt of sanitary inspection and the sanitary inspectors medical officers of health had to furnish copies of their ual reports. He wanted to extend that system. He eved that they could extend it very considerably in the er cities and boroughs, where they could use the local ical officer of health more and more. That was a ter which had to be remembered when they were sidering the inadequacy of the inspectorate and the al official reply that they could not afford to have more ectors. He thought they were on the wrong line if they e seeking to increase the centralised bureaucratic inspec-te. They ought to open up the factory system to local ple, who would gladly take an interest in it. He was id that the suggestion made by Mr. Hollins that certi-g surgeons should be whole-time men was quite imprac-ble. These surgeons had to be dotted about all over place. They ought to be given an opportunity of being e useful than they were at present. The certifying ory surgeon only had certain inspections detailed to him n called for by the factory inspector. He could not be ected, therefore, to sift through the whole of the cases that d be improved because he only had cases of definite illness ases that required attention by the lay inspector. He ld like to have some account of the extremely beneficent are work in the factories which had been extended so h since the war. It was a very hopeful work, instituted ng the war in the Department of Munitions by one of factory medical inspectors attached to the Ministry for purpose, and the Home Office had followed it up since. latest information was that statutory welfare orders been made for 14 industries so far. He would be glad now if they were going to be extended further. He had ays taken intense interest in the Factory Department of Home Office. It was nothing less than a second Ministry Health on which the health and efficiency of the nation ended.

r. JENKINS said that in consequence of recent appeals egard to the effect of silicosis among miners the Home e had appointed a medical man, but one medical man the whole country was totally inadequate to meet the ls of the mining and other industries and to investigate make reports on cases. The Home Office ought to oint larger staffs of medical men for this purpose. The e applied to nystagmus.

Reporting of Accidents.

Dr. VERNON DAVIES said that he was an old certifying factory surgeon of over 20 years' experience. There had been a justifiable complaint that evening of the small number of factory inspectors. During the war the Home Office took what he regarded as a very retrograde step. Up to that period practically all accidents were notified to the certifying factory surgeon, who had to visit the factory to see the identical place where the accident occurred, to get a report, then proceed to see the injured person and get his or her report, and finally to issue a report to the factory inspector and so to the Home Office. By that process two or three very important things were done. In the first place they were sure that the mill authorities reported the majority of their accidents, because they never knew what doctor a particular patient might go to, and news of an accident might leak out and reach the factory surgeon. Therefore they were compelled to carry out the regulations and report their accidents more closely. The second good point was that it enabled them to forward true accident reports. On more than one occasion he found in his investigations that the report sent to him by the mill authorities was not accurate. On the other hand he knew from his experience that unfenced machinery was not always the fault of the employers. It was sometimes the fault of the workers; they did not like the guard, and they removed it. The Home Office decided to do away with this reporting of accidents to the certifying surgeon because it cost the country the enormous sum of £7000 per annum. It was quite possible to report an accident so as to create a false impression, and it was possible that there were many accidents which ought to be inspected by the factory inspector which were not so inspected. Therefore in his opinion the Home Office took a retrograde step by cancelling the reporting of accidents by certifying surgeons. That procedure was to the advantage of the Home Office, to the advantage of the workers, and to the advantage of the mill, and he hoped that some time or other they would reconsider the position and see if they could not go back to the old method of reporting accidents. The fact that the mill authorities knew that the factory doctor might be in the mill any day kept them up to the mark. With regard to nystagmus the figures were going up. Some time ago, when he was looking at the figures for Belgium, he found that there was not the same rate of increase in nystagmus there as there was in this country. In Belgium compensation was only given for nystagmus for a certain definite time, at the end of which the compensation ceased, and for some remarkable reason the cases improved. That reminded him of the old days of the "railway spine," when people after railway accidents got concussion of the spine and never got better until the case was settled by the company. Sir William Thorburn, an eminent surgeon who was probably the greatest expert on "railway spine" in Europe, came to the conclusion and advised all his clients that the patient would never get better until the claim was settled. These people were not malingering, but there was some psychological condition which prevented them getting better until their claim was paid. He wondered whether in this country the same sort of thing was happening in regard to nystagmus, and whether it would not be better instead of saying that the man should be paid so much per week to give him a lump sum by way of compensation, which might have some effect on the recovery of the patient.

Mr. CONNOLLY: Do you think that as a medical man?

Dr. VERNON DAVIES said that he was arguing this matter from a medical standpoint and suggesting that a new method of compensation might be tried as an experiment. Silicosis was becoming more important every day, and he thought that it had been grossly neglected in this country. It really was rather astonishing, considering our huge mining industry, employing an enormous number of men, that a medical man should only have been appointed a few months ago by the Government for the first time to advise them on the medical conditions affecting this industry. The mining industry had been run for years without the slightest medical supervision. Another remarkable fact was that if a child wished to work in a factory or workshop it had to be examined by a certifying surgeon who certified whether the child was fit to work or not. That was not the case so far as the mines were concerned, and over and over again he had refused to pass children for work in the cotton mills because they were not strong enough, but they could laugh at him and go and get work in the pits without any examination at all.

Sir VIVIAN HENDERSON, Under-Secretary for the Home Office, said that that matter was not under the control of the Home Office.

Miners and Silicosis.

Dr. VERNON DAVIES said in that case he would not pursue the subject. Silicosis by itself was not a very dangerous disease. The worst it did was to cause shortness of

breath and perhaps a little difficulty in breathing. The danger came in when it became contaminated or infected with tubercle, and when they got that condition it was extremely dangerous and fatal. Considering the risks which miners ran in working in this rock dust it was high time that stringent regulations were made by the Home Office to deal with the problem. They had to bear in mind that certain people were perhaps more liable to infection by tubercle than others, and therefore in any scheme brought up to deal with the matter the health of the miner prior to and during his employment was very important. In any scheme brought forward to make silicosis a scheduled disease he presumed that the Home Office would have some control. He was convinced that the examination of the patient for silicosis should not be given to ordinary medical men, but should be done by Home Office specialists, because it was extremely difficult to diagnose accurately, especially in the early stage. It was very essential to have an expert radiographer, and the Home Office should consider the advisability of appointing a few specialists in this particular disease who could go round the country examining patients at different mines at definite regular periods. It was no use waiting until the man could not work; he should be examined regularly. It would only be necessary to examine the mines where there was a large amount of silica. Coal dust itself did not produce silicosis; in fact it did good, because it lessened the liability to consumption. Colliers were among the healthiest people in the country, and statistics proved that they were less subject to pulmonary tuberculosis than any other grade of workers, except agricultural workers. If his suggestion was carried into effect they would improve the health of the miner and prevent a certain number of deaths by getting a man away from the pits when he was in a recoverable state.

Shuttle-kissing.

Mr. T. SHAW said there was a museum in London which contained an extraordinarily interesting collection of safety appliances for machines and also a number of diagrams of great interest and value to those engaged in industrial occupations. He wished to pay his tribute to that part of the Home Office work and to express the hope that it would be developed. The principal thing to which he wished to refer—and he believed that the matter could be dealt with by administrative order from the Home Office—was the practice known in Lancashire as shuttle-kissing. They never could get a body of medical opinion to say that this practice was dangerous, yet nearly every weaver over 20 years of age in Lancashire had either very badly decayed teeth or was wearing artificial teeth. Surely there was a connexion between the constant kissing of the shuttle with the drawing of the weft and the dust into the mouth and this extremely high average of decayed teeth among weavers. In any case it was a disgusting, dirty, and dangerous habit. It often happened that during an influenza epidemic a weaver left his work with influenza. The weaver who took his place used the shuttle and quickly went off work with influenza. It often happened that two, three, or even four weavers used the same loom and the same shuttle and went off work one after another. Further, in cases where colours were used of a free type the weaver had his lips and mouth dyed by the colour that was used. He had seen weavers with their lips, teeth, and inside of the mouth green, blue, and red, and the whole of their arm covered with a kind of fine dust which "ran" when perspiration took place. They could understand what it meant to a person drawing that kind of thing into the mouth day in and day out. He distinctly remembered a case which happened in his youth when he was working in a mill. A man who was afflicted with a very loathsome disease went away from his work and the man who followed him on his looms contracted the same disease. Nothing ought to stand in the way of the replacement of the shuttles by hand-threaded shuttles, if that could be done. He asked the Home Office seriously to consider making an order which would do away with this dangerous and disgusting practice.

Lieut.-Colonel WATTS-MORGAN urged the appointment of a larger number of medical men to carry out research work and inspection. He also suggested that compulsory insurance against injuries sustained by these workers should be applied to all colliery companies.

Mr. CONNOLLY referred to certain new draft regulations which he said were about to be issued by the Home Office in connexion with the use of the oxy-acetylene welding machine in ships and elsewhere. This question arose out of a fatal accident on the Mersey in which two men lost their lives through an explosion in a confined space. The proposed new regulations which he believed were based upon that accident provided that prior to a welding operation by the oxy-acetylene machine there must be first of all a purifying of the air in the space where the machine was to work and that during the operation there must be a continual supply of fresh air. That was all very well as far as it went, but to meet practical needs the use of this machine in confined spaces ought to be totally prohibited. Provision should made that nothing but the electric welder should be u in cases of this kind.

Under-Secretary's Reply.

Sir V. HENDERSON, replying to the debate, said tha they were going to make any comparison of figures rela to industrial accidents the two years that they ought compare were 1927 and 1925. In 1925 there were 159, accidents, of which 944 were fatal, as compared with 156, in 1927, of which 973 were fatal. Therefore on figures al he did not think that any great case could be made against the Factory Department of the Home Office. agreed that there was a slight reduction in the inspecto compared with the pre-war staff. The present position admitted, was not satisfactory, and he hoped it might possible to obtain an increased number of inspectors. there had been no slackening in regard to the inspectio factories. That inspection had been more complete thorough than in previous years, and if there had b any slackening it had been in regard to the inspection of s workshops where there was not generally the same r This question must to a large extent be mixed up with t of the Factories Bill. That Bill had been held up for moment—he hoped only for the moment—but when reached the Statute Book it would carry with it obligation the Factory Department which would necessitate an incre in the number of inspectors. In order to show that Home Office really had this matter at heart the H Secretary had promised in the autumn to set up a s committee to go into the question of the staffing organisation of the factory inspectorate at the Home Of and he (Sir V. Henderson) hoped that he might be chairm of that Committee. Therefore the matter would not lost sight of. As a result of the "Safety First" circu which had been referred to in the debate, the Home O had received very satisfactory assurances from a numbe important employers' organisations, and they were assu that the matter was bearing fruit by reports they received from their inspectors. As regarded the danger f shaving-brushes infected with anthrax, the Ministry Health already had power to prohibit the importatio dangerous brushes. A proposal had been made to b sides of the painting industry to coöperate with the H Office in carrying out the lead paint regulations. T coöperation had been given and the figures proved that position was improving. So far as nystagmus was concer he had not the figures for 1927. The Home Office was concerned with nystagmus from the point of view compensation and not from that of prevention, which a matter for the Mines Department. He fully endo everything which Mr. Mackinder had said about the excel work which was being done at the disinfecting statio Liverpool, but he would realise that it was not possible that station to deal with the disinfection of hides. satisfactory system had yet been discovered for that purp although inquiry was being made. The report as to the fur scheduling of wool for disinfection was now in the hand the Home Secretary, but had not yet been publis From the point of view of expense it was extrem reassuring—much more so than some people anticipa Hon. Members ought to rest assured that this matter w receive very sympathetic consideration. So far as international aspect of the question was concerned, Aust and India had always refused to coöperate, and so lon that attitude was maintained it was really impossibl deal with the question internationally. The questio silicosis was surrounded with enormous difficulties. W the Home Secretary was prepared to consider whethe could amend or improve or expedite matters it was c likely that it would entail legislation, and therefor (Sir V. Henderson) could not discuss it that night. W regard to what Mr. T. Shaw had said about shuttle-kiss the Home Secretary had announced that he would be c prepared to consider dealing with it in a clause in Factories Bill if he could have some general informa that it was desired by the vast majority of the wor concerned.

Mr. SHAW said that he would give that information at earlie[illegible] possible opportunity.

Sir V. HENDERSON said that he was inclined to agree some of the strictures passed by Mr. Hollins on the subje certifying surgeons. But if they were going to alter whole system of certifying surgeons legislation would required, and therefore it was a matter which he could discuss in detail that night. There was also a very impor matter which not only arose generally as to the certif surgeons, but particularly in regard to silicosis, and that that they knew that the certifying surgeon in no circumstances was not competent to examine silicosis c If they were to alter the whole position of the certif surgeon and have a full-time medical expert on a def salary they would have to get a Home Office medical

omething of that kind. Quite apart from legislation that ıld require some compensation fund or medical fund into ch the employers would pay, so that the medical men ld be paid for their services. The matter was extremely ıplicated, but it was being looked into. While he would glad to look into the point raised by Mr. Connolly in ard to the use of the oxy-acetylene welding machine he not prepared to give any definite undertaking on the ter at the moment.

he motion to reduce the vote was negatived by 212 votes 10.

BILLS ADVANCED.

he Food and Drugs (Adulteration) Bill passed through ımittee on recommitment in the House of Lords on dnesday, July 18th. This measure passed the Report ge in the House of Lords on Thursday, July 19th. The ld Destruction Bill was read a first time in the House of mons on Tuesday, July 17th.

n the House of Lords on Monday, July 23rd, the Marriages ohibited Degrees of Relationship) Bill was read a second e. The Food and Drugs (Adulteration) Bill was read third time, and passed. The Reorganisation of Offices otland)Bill passed through Committee.

HOUSE OF COMMONS.

WEDNESDAY, JULY 18TH.

Lysol Poisoning.

ir F. MEYER asked the Home Secretary whether his ntion has been called to the numerous deaths, either dental or suicidal, following upon the taking of lysol, ch had recently been reported, and if he could state total number of such deaths during 1927 and also during first six months of 1928.—Sir W. JOYNSON-HICKS ied: I am aware that of recent years there has been a siderable increase in the number of deaths from the ng of lysol, and my Department has brought the relevant tality statistics to the notice of the Inter-Departmental ımittee which is considering the law relating to the sale oisons. The figures for 1928 are not yet available; se for 1927, which are provisional, are as follows: Deaths n lysol poisoning: by accident, 13; by suicide, 361.

Registration of Births and Deaths.

ir NICHOLAS GRATTAN-DOYLE asked the Minister of lth whether the registration of births and deaths, under plans for the reform of the machinery of local govern- t, would be severed from the poor-law administration. r. CHAMBERLAIN replied: The exact arrangements to nade in regard to the registration service in connexion n the scheme of local government reform are still under sideration, and my right hon. friend regrets that he is in a position to make a statement on the subject.

THURSDAY, JULY 19TH.

The Dangers of the Use of Allonal.

r. Robert Young asked the Secretary of State for the ne Department whether the German drug allonal was ng those governed by the Dangerous Drugs Act; if whether he was aware of the growing demand for this ; and of the danger entailed in its use; and whether he ld take steps to ensure that allonal should not be avail- without a doctor's prescription.—Sir WILLIAM JOYNSON- KS replied: The Dangerous Drugs Acts do not apply 'allonal," which is understood to be the proprietary e given by a Swiss firm of manufacturing chemists to rivative of barbituric acid. I am aware of the dangers, have brought the question of the need for further rictions in the case of these drugs before the Inter- artmental Committee which has been examining the relating to poisons.

Slaughter of Tuberculous Cows.

r. BUXTON asked the Minister of Agriculture the number ows affected by tuberculosis which had been slaughtered 926 and 1927 in pursuance of the Tuberculosis Order, ; and whether he was satisfied that the order was fully ative.—Mr. GUINNESS replied: The number of cows uding heifers) slaughtered under the provisions of the erculosis Order, 1925, in 1926 and 1927 is 16,522 and 08 respectively. Local authorities have now completed arrangements for carrying out the requirements of Order, and I am satisfied that the Order is properly uted.

r. BUXTON: Does the Minister not think that in view e increase, an increase in the staff of inspectors is needed? r. GUINNESS: I do not think so; the local authorities n to be carrying out their duties satisfactorily.

Treatment of Lunacy and Mental Disorders.

Mr. PETHICK-LAWRENCE asked the Minister of Health what steps, if any, he was proposing to take to implement the administrative recommendations of the Royal Commission on Lunacy and Mental Disorder; and, in particular, whether he could see his way to do anything for those suffering from the effects of sleepy-sickness who were not suitable either for lunatic asylums or poor-law institutions.—Mr. CHAMBERLAIN replied: I have arranged that the administrative recommendations of this Commission are borne constantly in mind in the day-to-day administration of the Lunacy Acts, and are worked to so far as is practicable in present circumstances. The problem presented by the after-effects of encephalitis lethargica is under constant review; and it will no doubt be possible to deal with certain of these patients under the Mental Deficiency Act passed last year, which amended the definition of mental defect for this purpose.

Dr. Voronoff's Experiments.

Mr. BRIANT asked the Secretary of State for the Home Department if the licences granted for permission to practise vivisection include power to carry out such operations of the grafting of glands as had been practised by Dr. Voronoff in other countries.—Sir WILLIAM JOYNSON-HICKS replied: I assume that the hon. Member refers to the reported experiment on a monkey to which his question of June 13th related. No such experiment has been, or will be, permitted in this country.

Deaths from Puerperal Causes.

Mr. VIANT asked the Secretary of State for the Home Department whether he was prepared to order that an inquiry shall be held in all cases where death had resulted from puerperal causes.—Sir WILLIAM JOYNSON-HICKS replied: I have no power to make such an order. But I understand that my right hon. friend, the Minister of Health, is arranging, with the concurrence of the British Medical Association, for maternal deaths to be investigated for scientific and public health purposes by competent medical officers in each area, and that these investigations will be considered by the Committee on Maternal Mortality which he has recently appointed.

Voluntary Health Insurance Contributors.

Major CARVER asked the Minister of Health if he was still considering the possibility of grafting on to existing national health insurance a scheme for the benefit of voluntary contributors other than those now included.—Mr. CHAMBERLAIN replied: The possibility of widening the scope of voluntary insurance under the joint scheme of National Health Insurance and contributory pensions is still under consideration, but I regret that I have not yet found any satisfactory solution of the very serious difficulties which any such proposal presents.

MONDAY, JULY 23RD.

Exemption from Duty of Scientific Films.

The House considered the Finance Bill on Report.

Captain FRASER moved a new clause, providing that the Customs duties imposed by Subsection (1) of Section 3 of the Finance Act, 1925, on negative and positive cinematograph films should cease to be payable in the case of a film which was certified by the Royal Society of London for Promoting Natural Knowledge to be solely an illustration of scientific investigation for exhibition before members of a recognised scientific body, and which was imported only for the purpose of such exhibition free of charge. The clause also provided that if any person exhibited otherwise than as provided under the clause, any film which had been exempted from duty under the section, he should, on summary conviction, be liable in respect of each offence to a fine not exceeding £50. Captain Fraser said that in 1925, under the Finance Act, a tax was placed on films imported into this country. At that time it was probably not realised that films, apart from being a means of amusement and education, were also sometimes used as a record of scientific work of no interest to the general public, but of very great value to a limited number of scientific workers. In the last two or three years great developments had taken place in the technique of the use of films as a record and illustration of scientific research. It was generally agreed that it was undesirable to place a tax upon scientific work, or indeed upon knowledge of any kind. When the matter was discussed on an earlier stage of the Finance Bill, the Financial Secretary to the Treasury and the Chancellor of the Exchequer said that the administrative difficulties were very great, but that they would do their best to meet the point. He (Captain Fraser) was happy to say that, by the instructions of the Chancellor of the Exchequer, conversations had taken place with the Customs officials which led him (Captain Fraser) to suppose that this clause could be

worked by them if the House wished to pass it. He was able to say that the Royal Society would undertake the liability which it was suggested they should be asked to undertake. He therefore asked the Financial Secretary if he would accept the clause. He could assure him and the House that if he was willing to do so, men of science would be very grateful and that it would be a gesture of goodwill to those who were doing most valuable work. (Cheers.)

Mr. CRAWFORD, in seconding the clause, said that if the Government could make this concession it would be a help to the scientific and medical world. It would also give a stimulus to a small, but very notable, industry in this country which was concerned in the development and preparation of the best kind of film. He had within his own knowledge two establishments in London where, with the slightest encouragement, negatives of films of all sorts would be sent from all over the world—films which it was desired should be treated in the most expert way possible. This industry had been interrupted a good deal by the imposition of duties on the films, and he hoped the Financial Secretary to the Treasury would realise that if he could make this concession he would do a great deal to help this industry, and would help the scientific world and give a tremendous stimulus to the preparation of scientific films for use in medical and surgical cases.

Mr. A. M. SAMUEL (Financial Secretary to the Treasury) said that he remembered the previous discussion on this matter. The Chancellor of the Exchequer and he were on that occasion very sorry that they could not then accept the new clause for the reason that it was difficult to get a definition of "scientific investigation." The Chancellor of the Exchequer then said that he would look into the matter and see if he could find a way out. He (Mr. Samuel) was very glad to say that he could now accept the clause. They had found a way out to help Captain Fraser. The Royal Society of London was good enough to say that it would certify, when required, a film that was said to be an illustration of scientific investigation. That was a statement which the Customs officials could easily accept. He could not pledge himself as to the cost, but he did not think it would amount to more than £200, and probably would not be so much as that, because in many cases films would not be imported if the duty were imposed on them. The Government were delighted to be able to accept the clause. (Cheers.)

The clause was read a second time and added to the Bill.

Women Officials in the Board of Education.

Mr. PETHICK-LAWRENCE asked the President of the Board of Education whether his attention had been drawn to the fact that, excluding the inspectorate, and those employed on clerical duties, there were no women in the Board of Education; and whether, in view of the desirability of associating women with this work, he would take steps when future vacancies occurred to appoint women by promotion, transfer, or otherwise to responsible posts under the Board.—Lord EUSTACE PERCY replied: In addition to the women inspectors and women executive and clerical officers, the Board of Education staff includes a chief woman medical adviser, two women medical officers, a woman administrative officer, and a woman librarian. A woman was among the six candidates recently interviewed for a vacancy in the administrative class, which was filled by promotion, and women are equally eligible with men for vacancies filled from the Civil Service competitive examination.

Social Hygiene in the Colonies.

Viscount SANDON asked the Secretary of State for the Colonies whether the Under Secretary of State, on his recent visit to the Straits Settlements, investigated any of the problems dealt with in the 1924 Report on Social Hygiene; whether the situation was now better or worse than at that time; and whether any further steps were to be suggested or taken to remedy the evils that were therein stated to exist.—Mr. AMERY replied: The Under Secretary of State for the Colonies had some discussion about this matter with the Governor of the Straits Settlements and his advisers during his recent visit to Malaya. The Government concerned are proceeding on the lines recommended by the Committee in question, which recognised that improvement in this, as in other matters of social welfare, must necessarily be gradual. I understand that the situation already shows some improvement, and that it is not considered that any steps other than those recommended by the Committee can usefully be taken at present.

TUESDAY, JULY 24TH.

River Pollution and Public Health.

Sir ARTHUR CHURCHMAN asked the Minister of Health whether his attention had been called to the serious pollution of the River Gipping caused by effluent from the artificial silk works at Stowmarket; whether he was aware that t had been numerous cases of illness among human beings poisoning of stock as a result; and whether, to avoid consequences of further delay in abating the nuisanc would authorise the local authorities concerned to immediate action without waiting for an official inq —Sir KINGSLEY WOOD replied: My right hon. friend is a of this case. He has no confirmation of cases of illne of poisoning of stock from pollution. My right hon. f has, however, received from the Rural District Counc application for consent to take proceedings against company, and has directed a public inquiry to be he the earliest practicable date into the application. I afraid that an inquiry must first be held.

Poisoning Caused by Lemonade.

Mr. WILLIAM THORNE asked the Minister of Heal his attention had been called to a report by the Newc city analyst about the illness of at least 50 of the st one of the big shops in the city caused by antimony pounds contained in the lemonade which the assis drank; if he was aware that the cause of the illness w consequence of the enamel on the buckets which cont the made-up lemonade; and if he could state wheth intended taking any action in the matter.—Sir KING WOOD replied: My right hon. friend's attention has drawn to this case and he understands that the fact as stated in the question. The city medical offic health is preparing a report on the occurrence an receipt of that report my right hon. friend will co what action, if any, can be taken.

Medical News.

UNIVERSITY OF LONDON.—At recent examina the following candidates were successful:—

M.D. EXAMINATION.

Branch I., Medicine.—Margery G. Blackie, London (R Sch. of Med. for Women; Frank R. Fletcher, L Hosp.; Francis H. K. Green, St. Bart.'s Hosp.; Be H. Jones, St. Thomas's Hosp.; John W. Joule and E A. E. Klaber, St. Bart.'s Hosp.; Geoffrey L. S. Kohn King's Coll. Hosp.; Patrick H. O'Donovan, London H Navroji Kharshedji Sahiar, Grant Med. Coll., Bo and Univ. Coll. Hosp.; and Ian H. Stevens, Univ Hosp.

Branch II., Pathology.—Cicely Weatherall, London (R Sch. of Med. for Women.

Branch III., Psychological Medicine.—Norman Mc St. Bart.'s Hosp.

Branch IV., Midwifery and Diseases of Women—John Robinson, St. Thomas's Hosp.; Stephen J. Scu London Hosp.; and Arthur J. Wrigley (University M St. Thomas's Hosp.

Branch V., State Medicine.—William G. Booth, Guy's

Branch VI., Tropical Medicine.—Percy C. C. Ga (University Medal), St. Bart.'s Hosp.

M.S. EXAMINATION.

Branch I., Surgery.—Geraldine M. Barry, London (R Sch. of Med. for Women; Harold C. Edwards, Coll. Hosp.; and Gerald H. Steele, Univ. Coll. Hos

DIPLOMA IN BACTERIOLOGY.

Mohamed Abd El-Hamid Gohar, Kumarapuram Vyt Krishnan, Ram Bihari Lal, Marion Watson, and Ja Young.

B.SC. EXAMINATION.

Physiology.—Agnes Shore (first-class honours), Univ. and Effie Slater (second-class honours), Univ. of Lee

At a meeting of the Senate on July 18th an offe accepted from H.R.H. the Duke of Connaught to tran the University the Duchess of Connaught Memorial H and a committee was appointed to manage it as a residence for students of European origin, prefere necessary, being given to men from Canada and the Dominions.

Mr. Robert Donaldson, M.D., Ch.B. Edin., F.R.C D.P.H., was appointed as from August 1st, 1928, Sir William Dunn Chair of Pathology tenable at Hospital Medical School. Dr. Donaldson was d strator in pathology, University of Sheffield, 19 senior demonstrator and lecturer, Bristol University, 19 pathologist to the Royal Berks Hospital, Reading, 19 and since January, 1920, has been pathologist to St. G Hospital, and lecturer in pathology in the medical there. He is also pathologist to St. Mary Abbot's Ho

rincess Louise Hospital for Children, and the Hospital John and St. Elizabeth.

S. J. Cowell, M.B., B.Ch. Camb., M.R.C.P., M.R.C.S., appointed as from Sept. 1st, 1928, to the University of Dietetics tenable at St. Thomas's Hospital Medical ol. Dr. Cowell was appointed in December, 1920, assistant to the medical unit at University College ital, and since January, 1923, has been assistant to E. Mellanby at the University and Royal Infirmary, eld. His recent work includes papers on the effect of on hyperthyroidism in man and the action of irradiated erol in human rickets.

H. D. Wright, M.D., Ch.B., D.Sc. Edin., B.A. Tas-a, M.R.C.P.E., was appointed as from Oct. 1st, 1928, e University Readership in Bacteriology tenable at rsity College Hospital Medical School. Dr. Wright ned the M.D. degree and gold medal at the University linburgh in 1925, and the D.Sc. degree in 1927. He Lister Research Fellow of the R.C.P., Edinburgh, in From 1920–23 he was lecturer in bacteriology in urgh University, and from 1921–23 assistant director e Research Laboratory of the Royal College of Physi- Edinburgh. Since 1923 he has been lecturer in riology at University College Hospital Medical School. s assistant editor of the *Journal of Pathology and riology*.

S. L. Baker, M.R.C.S., D.P.H., was appointed as Sept. 1st, 1928, to the University Readership in id Anatomy and Histology tenable at Middlesex ital Medical School. Mr. Baker has held the posts of logist to the King Edward VII Sanatorium, Midhurst, 22; senior assistant in the Bland-Sutton Institute of logy since July, 1922, and lecturer in morbid histology e Middlesex Hospital Medical School since May, 1923.

e title of Professor of Morbid Anatomy in the University onferred on Dr. G. W. de P. Nicholson in respect of art-time post held by him at Guy's Hospital Medical ol.

e title of Professor of Bacteriology in the University onferred on Dr. Alexander Fleming in respect of the ime post held by him at St. Mary's Hospital Medical ol.

view of Mr. S. A. Courtauld's munificent gifts for the ute of Biochemistry and the Medical School of the esex Hospital, it was resolved that the title of the rsity Chair of Biochemistry tenable at that Medical ol should be changed to "Courtauld Chair of Bio-istry in the University of London."

g's College of Household and Social Science was ted as a school of the University in the Faculty of ce (Household and Social Science only).

Holburt Waring was appointed representative at the th Centenary Celebrations of the University of Toulouse held in June, 1929. He has also been elected chairman e Finance Committee.

John Fawcett has been elected chairman of the ittee of the Medical Members of the Senate.

E. Graham Little, M.P., has been re-elected chairman Council for External Students.

IVERSITY OF MANCHESTER.—The following post-ate courses have been arranged for 1928–29. They e mainly clinical in character. A whole-time intensive in medicine and surgery will be held from Sept. 10th h, and one in obstetrics and gynæcology from Sept. 29th . 6th. Practitioners taking this last course will reside Mary's Hospital, Whitworth-street, Manchester. A ime course in diseases of the eye will be held from 2nd to Nov. 8th. In the spring of 1929 part-time s on the application of radiology to medicine in osis and treatment, on diseases of the skin, and on l pathology will be given. Clinical assistantships ered in the medical, surgical, and special departments Manchester Royal Infirmary, Ancoats Hospital, and special hospitals. Further information, tariff, and us can be obtained from the Dean of the Medical l.

YAL COLLEGE OF PHYSICIANS OF EDINBURGH.—rst woman to be elected Fellow of the College was uced at the quarterly meeting of the College held ly 17th, when Dr. A. Justina Wilson, London, took at. The President, Dr. Robert A. Fleming, was in air.—Dr. G. D. T. Kerr Cross (Natal), Dr. R. H. H. n (Edinburgh), Dr. Thomas Ferguson (Darlington), . H. H. Neven-Spence, and Dr. R. D. Mackenzie urgh) were elected Fellows of the College.—Dr. t Dods Brown has been appointed Morison lecturer 29.—It has been decided to confer the honorary rship of the College upon Dr. John Stewart Muir, of .

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College, held on July 19th, the following candidates, having passed the requisite examinations, were admitted Fellows:—

William F. Angus, George I. Boyd, Harold C. Carter, Harman Singh Chhachhi, Ronald O. Davidson, Nevile J. Everard, Edgar S. Freshman, Fred C. Hunt, Stewart Hunter, Clifford S. James, Edward N. Jamieson, Robert O. Jones, James Kemyee, Kedar Nath Kulahreshiha, Arthur Leigh, Bantwal Canapathy Hallya, Willard G. Maclean, Ian H. MacGillivray, Cyril M. Plumptre, George E. J. A. Robinson, Isidore Rosin, Arthur J. Stout, Robert Strang, William R C. Stowe, Beatrice E. Turner and Robert Watson.

The Ivison Macadam Memorial Prize, consisting of bronze medal and set of books, was, after a competitive examination in organic chemistry, awarded to Mr. Maurice Goldfar.

ROCKEFELLER MEDICAL FELLOWSHIPS. — The Medical Research Council announce that on behalf of the Rockefeller Foundation they have made the following awards of Fellowships provided by the Foundation and tenable in the United States of America during the academic year 1928–29. These Fellowships are awarded to graduates who have had some training in research work either in the primary sciences of medicine or in clinical medicine or surgery, and who are likely to profit by a period of work at a university or other chosen centre in America before taking up positions for higher teaching or research in the British Isles:—

Leonard Ernest Bayliss, B.A., Ph.D. Camb., Sharpey scholar at University College, London.

Albert Victor Neale, M.D. Birm., M.R.C.P. Lond., resident medical officer, Children's Hospital, Birmingham.

Francis John Worsley Roughton, M.A., Ph.D. Camb., lecturer in physico-chemical aspects of physiology, University of Cambridge (appointed on special conditions while retaining emoluments from other sources.)

Dorothy Stuart Russell, M.B., B.S. Lond., research worker in the Baron Institute of Pathology, London Hospital.

Arthur Wormall, M.Sc. Leeds, lecturer in biochemistry, University of Leeds.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.—In the examinations of the Division of Tropical Medicine and Hygiene, at the end of this term, March–July, the following students passed with distinction:—

C. N. Griffin (winner of Duncan medal), M. C. Cairney, G. L. Chadha, C. D. Newman, and A. N. Sharma.

INTERNATIONAL MEDICAL POST-GRADUATE COURSES IN BERLIN.—The medical faculty of the University of Berlin, with the coöperation of the Lecturer's Association for Medical Continuation Courses and the Kaiserin Friedrich-Haus, which is an institution concerned with the post-graduate education of doctors, have arranged special courses for October, 1928. These will include a general course on pulmonary diseases, Oct. 1st–13th; a special course for nose, throat and ear specialists, Oct. 20th; and a course on pædiatrics, Oct. 15th–27th. A course on new methods in diagnosis and therapeutics with practical work in the wards and laboratories of the City Hospital, Friedrichshain, will also be held. Besides this special programme for October, short courses of two to four weeks and posts as guest-assistant in clinics, hospitals, and laboratories are available by arrangement. The courses are held in German, but many professors are able to lecture in other languages. Further information as to suitable lodgings, costs, and visits to clinics are obtainable from the Kaiserin Friedrich-Haus, 2–4, Luisenplatz, Berlin, NW 6.

THE SUPPLY OF MILK TO MOTHERS AND CHILDREN. The Minister of Health received, on July 24th, a deputation from the representatives of 12 metropolitan borough councils regarding the supply of milk for expectant and nursing mothers and children. The deputation was introduced by Mr. Thurtle, M.P., and Councillor Key, of Poplar, and Councillor Green, of Deptford, also spoke. They urged the reconsideration of letters recently issued by the Minister of Health which announced a reduction in the Exchequer grant for the supply of milk by maternity and child welfare authorities during the present financial year. The Minister said, in reply, that the reduction complained of had been made in view of the general need for economy. The only other way in which the necessary saving could be effected was to stop for the time being any further development of maternity and child welfare services, and it seemed preferable instead to make some reduction in the grants paid for the supply of milk. He was not insisting that local authorities should reduce their expenditure on milk, but had only intimated to them the maximum expenditure for this purpose which he could recognise for grant during the present year.

WELSH NATIONAL MEDICAL SCHOOL.—At a meeting held on July 24th at Bangor the Court of Governors of the University of Wales adopted the Draft Charter establishing the Welsh National Medical School as an independent school of the University. The Draft Charter will now be submitted to the Privy Council. Unfortunately the differences between the staff of the Cardiff Royal Infirmary and the authorities of the school have not yet been resolved. The Registrar of the University College of South Wales and Monmouthshire, of which College the school is still a constituent part, has informed present and prospective medical students that, until more complete arrangements have been made between the Hospital and the College authorities, students preparing for degrees and diplomas other than those given by the University of Wales cannot be accepted for courses of instruction in the final subjects.

PAYING PATIENTS AT RUGBY.—Five paying beds, two each for men and women, and one for children, are to be provided at St. Cross Hospital, Rugby. Subscribers with incomes between £300 and £700 a year, and their dependants, will pay £3 3*s.* per week for medical and surgical cases, and £4 4*s.* for complicated maternity cases. These fees will include attendance, ordinary hospital board, R.M.O.'s services, ordinary nursing, ordinary medicines, and ordinary surgical attendance. Non-subscribers will pay £2 2*s.* per week more under each heading. Minor operation fees will range from £3 3*s.* to £6 6*s.*, and major operation fees from £10 10*s.* to £15 15*s.*; the physicians' attendance fee will be a minimum of £3 3*s.*, with £1 1*s.* for each subsequent week.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A special course in diseases of the chest will be held at the Brompton Hospital for one week beginning July 30th (fee, £3 3*s.*). From August 6th to Sept. 1st clinical and cystoscopic demonstrations will be undertaken by the staff at All Saints Hospital, on Mondays, Wednesdays, Thursdays, and Saturdays (fee, £2 12*s.* 6*d.*). Entrants should apply to the hospital for particulars of times. For those interested in infants diseases there will be a two weeks' course under Dr. Eric Pritchard's direction at the Infants Hospital from August 13th to 25th (fee £3 3*s.*). Visits will be paid to baby welfare clinics such as that at Thavies Inn, to the Blind Babies' Home, Chorley Wood, &c. The Queen Mary's Hospital staff will undertake an all-day "refresher" course from August 27th to Sept. 8th, consisting of demonstrations in all departments of medicine, surgery, and the specialties, designed especially for panel practitioners (fee, £3 3*s.*). There is also a general course arranged continuously throughout the year for which tickets are issued for periods varying from one week to 12 months. Information, syllabuses, tickets, and copies of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

THE ROYAL VICTORIA EYE AND EAR HOSPITAL, DUBLIN.—Last week the Governor-General opened the new wing of this hospital. The wing supplies accommodation for 40 additional patients, besides improving the accommodation for the staff. The funds were provided by the estate of the late Mrs. Harvey Lewis, who left a considerable sum of money to build a hospital in Dublin. As the sum was insufficient for this purpose the executors sought the direction of the Courts, and after hearing many suggestions Mr. Justice Meredith assigned the bequest to the Royal Victoria Eye and Ear Hospital for the extension. The hospital is now probably one of the largest and best equipped in the British Isles. Last year 2017 intern patients were admitted, and 13,863 were attended in the extern department.

STREET NOISES.—At a joint council meeting of the People's League of Health, held at 12, Stratford-place, London, on July 12th, a resolution was passed:—

That in view of the fact that eminent neurologists and mental experts have emphasised the grave effect on the nervous system of noises which tend to increase the incidence of functional mental and nervous disorders in our midst, this meeting urges upon the People's League of Health the desirability of calling the attention of the Government to the need for the control and diminution of preventable noises in our streets, and asks that the subject shall receive the serious attention of the Ministry of Health.

A letter embodying this request has been forwarded to the Minister of Health, who has been asked to receive a deputation consisting of Sir Farquhar Buzzard, Sir Maurice Craig, Sir Robert Armstrong-Jones, Sir James Purves-Stewart, Dr. A. F. Tredgold, Prof. G. Robertson, and Dr. Thomas Beaton.

METROPOLITAN HOSPITAL SUNDAY FUND.—[illegible] meeting of the Council of this Fund, which was held [illegible] Mansion House on July 20th, it was announced th[at] year's total collection amounted to £81,500. Of thi[s] £81,300 will be distributed among hospitals, instit[utions] dispensaries, and nursing associations of the metr[opolis]. The collections in the churches and chapels this yea[r] £2000 in excess of last year.

THE MERSEYSIDE HOSPITALS COUNCIL.—This [is the] name now adopted by the Hospitals Council of the Liv[erpool] Penny-in-the-Pound Scheme—which has been revise[d] renamed. The body consists of the officers and life me[mbers] nominees of the voluntary medical institutions, the ho[norary] medical staffs of the associated hospitals, representat[ives] organised labour, the employers' associations, the [contri]butors, the local municipality and Boards of Gua[rdians] the University of Liverpool, the British Medical Assoc[iation] and the Health Insurance Committee. The incom[e limit] for manual workers has been abolished, but non-m[anual] contributors, whose income exceeds the following limi[ts] be unable to secure free vouchers for service at the asso[ciated] hospitals: single persons, £4 per week; married p[ersons] without families, £5 per week; married persons with fa[milies] £6 per week. Ministers of any place of worship contri[buting] on Hospital Sunday will be entitled to recommend for [free] letter of introduction to an associated hospital any m[ember] of their congregation who has not been in a financial p[osition] to contribute to the Penny-in-the-Pound fund. [Non-] contributors' privileges will be extended to all ge[nuine] unable to obtain work, and free letters of introducti[on] be issued to all cases so certified by the appropriate [trade] union.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COL[LEGE] Prince of Wales's General Hospital, Tottenham.

MONDAY, July 30th.—2.30 to 5 P.M., Medical, Surgic[al] Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throa[t] and Ear Clinics. Operations.
WEDNESDAY, August 1st.—2.30 to 5 P.M., Medica[l] and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to [5] Medical, Surgical, and Ear, Nose and Throat [Clinics] Operations.
FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics to 5 P.M., Surgical, Medical, and Children's [Clinics] Clinics. Operations.

WEST LONDON HOSPITAL POST-GRADUATE COL[LEGE] Hammersmith, W.

MONDAY, July 30th.—10 A.M., Dr. Dowling: Skin [Depart]ment. 11 A.M., Mr. Tyrrell Gray: Surgical [Out-patients.] 2 P.M., Mr. Simmonds: Surgical Out-patients.
TUESDAY.—10 A.M., Medical Registrar: Medical [Out-patients.] 2 P.M., Mr. Addison: Operations. 2 P.M., Dr. [Dowling:] Medical Out-patients.
WEDNESDAY, August 1st.—10 A.M., Dr. Owen: [Lecture on] Diseases of Children. 2 P.M., Dr. Scott P[almer:] Medical Out-patients. 2 P.M., Mr. Gibb: Eye [Depart]ment.
THURSDAY.—10 A.M., Dr. Granger Stewart: Neur[ological] Department. 2 P.M., Mr. Donald Armour: Ope[rations] 2 P.M., Mr. MacDonald: Genito-Urinary Depa[rtment]
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. [Clinical] Dr. Ironside: Clinical Demonstration. 2 P.M. [Mr.] Sinclair: Surgical Out-patients.
SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose a[nd Ear] Operations. 10 A.M., Dr. Owen: Medical Dise[ases of] Children.
Daily 10 A.M. to 5 P.M., Saturdays 10 A.M. to [1] Medical, Surgical, and Special Departments. [Demons]tions, Anæsthetic Course, &c.

FELLOWSHIP OF MEDICINE AND POST-GRAD[UATE] MEDICAL ASSOCIATION, 1, Wimpole-street, Londo[n]

MONDAY, July 30th, to SATURDAY, August 4th. [HOS]PITAL FOR CONSUMPTION AND DISEASES OF THE [CHEST] (Brompton), Fulham-road, S.W. Special Cou[rse] one week. Fee £3 3*s.* Syllabus sent on req[uest] also those for Special Courses arranged for Au[gust] December inclusive.

Appointments.

COWELL, S. J., M.B., Ch.B. Camb., has been appointed [to the] newly instituted Chair of Dietetics, University of L[eeds]
GARLAND, H. G., M.B., Ch.B. Leeds, Demonstrator in Pat[hology] and Bacteriology at the University of Leeds.
ROY, D. W., M.B., B.Ch. Cantab., F.R.C.S. Eng., Ho[norary] Obstetric Surgeon to St. George's Hospital.

minster Hospital: MEACOCK, M. J., L.R.C.P. Lond.' M.R.C.S., and SWABY, E. E., L.R.C.P. Lond., M.R.C.S., Resident House Surgeons. HOWELLS, J. M., L.R.C.P. Lond., M.R.C.S.; KENDALL, A. W., M.B., B.S., M.R.C.S. Lond., L.R.C.P., Resident House Physicians.
fying Surgeons under the Factory and Workshop Acts; CAMPBELL, A. M., M.B., Ch.B. Glasg. (Islay, Argyll); CAMPBELL, T. H., M.B., Ch.B. Glasg. (Wishaw, Lanark); MACKAY, R., M.B., Ch.B. Aberd. (Beauly, Inverness); and THOMAS, G. L., M.B., Ch.B. Glasg. (St. Margaret's Hope, Orkney).

Vacancies.

For further information refer to the advertisement columns.

nor, Carnarvonshire and Anglesey Infirmary.—H.S. £200.
ingham, Birmingham and Midland Ear and Throat Hospital. 2nd H.S. At rate of £150.
ingham, Queen's Hospital.—Dental H.S. At rate of £50. Also Res. Anæsthetist. £70.
sburn County Borough.—Asst. Dentist. £475.
ngbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.
e, Bootle Borough Hospital, Derby-road.—Sen. M.O. Also 2 Jun. M.O.'s. Each at rate of £150 and £125 respectively.
ford, Bradford Royal Infirmary.—Two H.S.'s. £150.
hton, Royal Sussex County Hospital.—H.S. £150.
bridge, Addenbrooke's Hospital.—H.P. At rate of £130.
iff, Cardiff Royal Infirmary.—Three H.S.'s, three H.P.'s, and H.S. Gynæcological. Each at rate of £50. Also H.S. Ophthalmic. At rate of £75.
al London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. H.S. £100.
ter County Mental Hospital.—Fourth Asst. M.O. £350.
of London Hospital for Diseases of the Heart, &c., Victoria Park, E.—H. P. At rate of £100.
ntry, Coventry and Warwickshire Hospital.—Res. H.P. £125.
i, Lady Hardinge Medical College.—Woman Professor of Physiology. Rs.500 a month.
r, Royal Devon and Exeter Hospital.—H.S. At rate of £130.
ford, Hertford County Hospital.—H.P. At rate of £150.
pool University.—George Holt Chair of Pathology. £1200.
on Hospital Medical College, Mile End, E.—Assistantship in the Department of Physiology. £400.
chester, Baguley Sanatorium.—Asst. M.O. £350.
may Mission Hospital, Austin-street, Bethnal Green, E.—Jun. Res. M.O. £100.
astle-upon-Tyne, Wooley Sanatorium, near Hexham.—Asst. M.O. £350.
astle-upon-Tyne, Hospital for Sick Children.—Hon. P. to Skin Dept.
hampton, County Borough.—Asst. M.O. £600.
mond, Surrey, Royal Hospital.—Hon. Asst. Radiologist. Also Jun. H.S. £100.
rham, Rotherham Hospital.—H.P. £180.
eorge's Hospital, Hyde Park Corner, S.W.—Pathologist and Lecturer in Pathology.
orough, Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £120.
ty of Apothecaries of London.—Examiner in Midwifery.
ton, Taunton and Somerset Hospital.—Sen. House M.O. £150.
field, Clayton Hospital.—H.S. At rate of £150.
sey, Victoria Central Hospital.—Jun. H.S. At rate of £100.

Chief Inspector of Factories announces the following vacancies for Certifying Factory Surgeons: Melbourne (Derbyshire) and Poole (Dorsetshire).

rths, Marriages, and Deaths.

BIRTHS.

.—On July 14th, at Crooms Hill, Greenwich, the wife of Dr. Norman D. Ball, of a daughter.
TALE.—On July 10th, at Moor House, West Bromwich, the wife of Dr. W. P. Penhale, of a daughter.

DEATHS.

HAM.—On July 16th, Frederic Durham, M.B., F.R.C.S., aged 87.
WOOD SMITH.—On July 21st, at Chichester, Heywood Smith, M.A., M.D. Oxon., aged 90 years.
INEUX.—On July 16th, after a short illness, Echlin Storry Molyneux, M.R.C.S., L.R.C.P., of Siddington, Leamington Spa.

—*A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

NDEX TO "THE LANCET," VOL. I., 1928.

HE Index and Title-page to Vol. I., 1928, which completed with the issue of June 30th, is now y. A copy will be sent gratis to subscribers eceipt of a post-card addressed to the Manager 'HE LANCET, 1, Bedford-street, Strand, W.C. 2. scribers who have not already indicated their e to receive Indexes regularly as published ld do so now.

Notes, Comments, and Abstracts.

RHEUMATIC DISEASES:

THE TREATMENT OF UNDERLYING INFECTION, INCLUDING VACCINES, THEIR USE AND ABUSE.*

BY SIR WILLIAM WILLCOX, K.C.I.E., C.B., C.M.G., M.D., F.R.C.P. LOND.,
PHYSICIAN TO ST. MARY'S HOSPITAL, W.; MEDICAL ADVISER TO THE HOME OFFICE.

THE rheumatic diseases under consideration comprise: (1) acute and subacute rheumatism—the so-called "rheumatic fever"; (2) infective rheumatism, which includes:—

(*a*) Acute infective arthritis.

(*b*) Non-articular manifestations of chronic rheumatism in which the fibrous tissues are involved, such as fasciæ, aponeuroses, tendons, ligaments, bursæ, perineural tissues, bones, and periosteum (Heberden's nodes), fibrous deposits or thickenings of connective tissue (finger-pads, &c.). The comprehensive term "*fibrositis*" may be regarded as including all of these manifestations.

(*c*) "*Chronic arthritis*," or all forms of chronic rheumatism in which chronic joint changes occur, such as osteoarthritis, arthritis deformans, rheumatoid arthritis, chronic villous arthritis, &c. Forms of arthritis and fibrositis due to specific infections such as gonorrhœa, dysentery, tuberculosis, syphilis, &c., are excluded from consideration.

It will be universally admitted that an underlying infection is a most important ætiological factor in the causation of the rheumatic diseases under consideration. In most cases it is the primary causative factor.

Other ætiological factors play a part in the causation of rheumatic disease, such as defective hygienic conditions, an inadequate and improperly balanced dietary, hereditary diathesis, and so on. These may act by reducing the body resistance to infection, and they may predispose to the establishment of the underlying infection in the body.

The joint and connective tissue disorders which characterise rheumatic disease, whether it be rheumatic fever or one of the forms of chronic rheumatism, are not diseases per se, but are the local manifestations of the toxæmia of an underlying infection.

The proof of this statement is to be found in the other coexistent evidences of disease which accompany the rheumatic symptoms. Thus, in acute and subacute rheumatism, as was pointed out by the late Dr. W. B. Cheadle, the late Dr. David Lees, and Sir Thomas Barlow over 30 years ago, the joint symptoms are the least important part of the disease. Much graver manifestations of the disease were the heart complications such as pericarditis, myocarditis, endocarditis, the lung complications such as pleurisy and pneumonia, and the nervous complications such as chorea.

In chronic rheumatism, if carefully looked for, one always finds other evidence of the toxæmia besides the purely rheumatic symptoms, thus, a secondary anæmia is almost always present, and is accompanied by a general impairment of health, gastro-intestinal disorders, and other evidences of a toxæmia affecting different parts of the body.

(1) *Acute and Subacute Rheumatism.*

In childhood and pre-adult life the channel of the underlying infection appears to be the nasopharyngeal tract. Unhealthy tonsils are commonly found in the first attacks, and much evidence has been accumulated in recent years to prove the important part which infected tonsils play in the causation of acute and subacute rheumatism.

It has been my experience of hospital practice that one does not meet, to anything like the same extent to-day, with the virulent cases of rheumatic fever in children which were so common 30 years ago. Rheumatic hyperpyrexia rarely occurs at the present time, and the very severe cases of rheumatic fever in children are, I believe, much less common than formerly.

In my opinion, this improvement is largely due to the development of school hygiene and the medical supervision of children attending the elementary schools, whereby unhealthy conditions of the nasopharynx are recognised and receive, where necessary, appropriate medical and surgical treatment.

The improved sanitary conditions of houses, drainage, &c., and the care taken in refuse removal and disposal have also no doubt, played a part in reducing exposure to infection.

In acute and subacute rheumatism occurring in children during the pyrexial period, no special treatment is indicated for the underlying infection beyond the local treatment for

* A paper read at the Bath Conference on Rheumatic Diseases.

existing nasopharyngeal conditions, and the usual treatment with salicylates.

When the acute condition has subsided, and, provided that no cardiac or other complications contra-indicate, it is most important that any diseased condition of the nasopharynx should receive appropriate treatment. Thus unhealthy tonsils and adenoid tissue should be removed, and any disease of the accessory nasal sinuses should receive attention. The stumps of tonsils that have been imperfectly removed are often foci of infection, and may be responsible for recurring rheumatic attacks. These, if present, should receive careful examination, and be removed if found unhealthy.

When any gross focus of infection has undergone removal as far as possible, no further special treatment of the underlying infection is necessary if the patient remains in good health.

It must be remembered that other foci of infection exist in the nasopharynx besides the tonsils and accessory nasal sinuses, thus the whole of this surface area contains tubular glands which secrete mucus as one of their functions, and the submucous region contains numerous collections of lymphoid tissue.

The recurrence of acute and subacute rheumatism in children in whom the tonsils and adenoids have been efficiently removed is due, I believe, to a persisting infection in these glands and lymphoid collections. Surgical treatment is impossible in such cases, and vaccine treatment may be of value, in addition to local treatment by sprays, vapours, and gargles, &c.

Should rheumatic symptoms still recur in cases in which unhealthy tonsils and adenoids are not present, it is advisable for a swab of the nasopharyngeal area to be taken and bacteriologically examined. If a definite infection with a pathogenic streptococcus is found, vaccine treatment is often of value.

It must be remembered that streptococci of nasopharyngeal origin are often very toxic in character. It is, therefore, advisable to give only small doses of an autogenous vaccine of this type. A weak vaccine such as 2,000,000 per c.cm. may be prepared, and a graduated course of inoculations given in doses of 2, 3, 4, 5 minims at intervals of five days, and then weekly doses, the dose being increased by 1 minim weekly for three months.

It has been my experience that much better results are gained by the use of autogenous vaccines than with stock vaccine prepared from other cases.

In acute and subacute rheumatism *affecting adults*, often other foci of infection than the nasopharynx play a part.

Secondary infections of the intestinal tract are commonly present, and also the dental region is liable to infection.

In such cases a careful examination should be made for secondary foci of infection in other regions than the nasopharynx, and these should receive appropriate treatment.

Thus, infected teeth should be removed at such time as this can be safely effected. Intestinal infections may be treated advantageously by Plombières douches, colon irrigations, &c.

Bacteriological examination of the urine, &c., should be made, and any existing infection of the urogenital tract receive suitable treatment.

In the acute stage of rheumatic fever, whether in children or adults, vaccine treatment in my experience should be entirely avoided.

The use of salicylates in full doses, combined with appropriate alkali-producing drugs, is the safest and best remedy in this stage. Often where response to treatment is not immediate, an increase in the dosage of sodium salicylate brings about a cessation of the acute symptoms. In this procedure care is taken that symptoms of acidosis are not present, and that acetone and diacetic acid are absent from the urine.

In exceptional cases of true acute rheumatism in adults, where response to salicylate treatment is tardy, antistreptococcus serum of appropriate type may be given. It is wise that the initial dose should be quite small—e.g., 5 c.cm. subcutaneously. If no unpleasant symptoms result from this, a dose of 20 c.cm. may be given in six hours, and this may be followed by two or three further doses of 20 c.cm. at intervals of 24 hours respectively. Any danger from anaphylactic shock is avoided by giving the preliminary small dose. Serum should never be given if there is any danger of anaphylaxis, and is, therefore, avoided where a patient has had, on previous occasions, animal serum administered subcutaneously.

After a course of antistreptococcic serum has been given, no further doses are permissible, since, after an interval of a few days there would be danger of anaphylactic shock should any doses be repeated.

In adults there may be a tendency for the recurrence of acute and subacute rheumatism in spite of the adequate treatment of gross foci of infection, and of other therapeutic measures, such as medicinal and spa treatment.

In such cases it is advisable to carry out bacteriolog investigations of a nasopharyngeal swab, stools, intestinal washings, and the urine (catheter specim Usually a pathogenic streptococcal infection is found.

A course of vaccine treatment with an autogenous vac made of the pathogenic streptococci from the various sou is sometimes beneficial.

It is advisable to use a vaccine of weak strength, suc 5,000,000 per c.cm. for a preliminary course, giving d such as 2, 3, 4, 5 minims at intervals of five days respectiv and afterwards weekly inoculations, the dose being incre by 1 minim each week.

If this course gives good results a further course of in lations with a stronger vaccine (50,000,000 per c.cm.) be given in weekly doses of 2, 3, 4, 5, 6, 7, 8, 9, 10 min respectively.

Contra-indications to vaccine treatment in adult c would be the presence of any existing gross focus of infec which could be removed with advantage, such as se tonsils or septic teeth, also any evidence of sensitisation as the occurrence of gout, urticarial eruptions or pru angioneurotic œdema, asthma, &c.

(2) *Infective Rheumatism.*

(*a*) *Acute Infective Arthritis.*—The great majority of c of infective rheumatism are of the chronic type. Someti however, acute cases occur in which there is evidence o acute toxæmia, such as marked and continued pyre and definite symptoms of acute arthritis or fibrositis.

Complete rest is the first essential.

A careful investigation should be made to discover presence of any foci of infection. In cases of this typ active infection always exists, and the most judicial sideration is necessary before active measures are take dealing with any removable foci.

When infected teeth are the cause of acute toxæmia infective arthritis, it is usually advisable and necessar remove these in the acute stage of the illness.

One of many similar cases that have been under my may be quoted:—

The patient, male, aged 57, seen May 26th, 1925, had suff for six weeks from painful and tender swelling of the joints, hands and wrists. The right knee was swollen and painful, being present in the joint. The elbows and shoulders were pai The temperature had ranged from 100° to 103° F. for the v period. There was no history of rheumatic fever, and the c tion did not respond in the least to salicylates.

An autogenous streptococcal vaccine, and antistreptoc serum had been tried without benefit.

An X ray examination of the teeth showed the presen periodontitis, but no apical infection was present. No other of infection was present. Sir Frank Colyer saw this patie consultation with me, and was of opinion that an acute p dontitis was present.

Removal of the remaining 15 teeth was decided upon. condition of the patient was so serious that a general anæst was unsafe. The teeth were removed three at a time under anæsthesia, an interval of 10 days being allowed betwee respective extractions.

It was necessary for all the teeth to be removed, since until then did the pyrexia completely subside and the sw of the joints disappear. This patient has remained quite since his illness, and the joints have been normal.

In conditions of acute toxæmia and infective arth due to septic tonsils, removal of the tonsils in the a stage of illness is impossible owing to the grave risk would be involved of local sepsis or of acute streptoc septicæmia.

In such cases large doses of antistreptococcal serum of value. They should be given with the precautions alr described.

When the acute toxæmia has subsided and the temper has remained normal for a few weeks, the removal o tonsils will usually be advisable owing to the risk of dev ment of chronic rheumatism.

A case of acute toxæmia and infective arthritis du acute pharyngitis has recently been under my care i Mary's Hospital.

The patient, male, aged 28, was taken ill with pyrexi Nov. 25th, 1927, acute pain and swelling of the joints o hands, wrists, knees, and ankles occurred, there were pai limitation of movement of the hip- and shoulder-joints. pharynx was red and inflamed. The temperature ranged 99° to 101° F. for five weeks.

There was no history of rheumatic fever, and the con did not respond to large doses of salicylates.

X ray examination of the teeth showed nothing abno My colleague, Mr. W. H. Dolamore, found the teeth health clinical examination. The tonsils and accessory nasal si were found free from sepsis by my colleague Mr. Cecil Gra

There was no evidence of urogenital infection. Bacteriol examination of the stools and urine gave a normal result marked infection with *Streptococcus viridans* was found i pharyngeal swab, and an autogenous vaccine of str 5,000,000 per c.cm. was prepared. On Dec. 22nd, 23rd, and doses of 20 c.cm. antistreptococcal serum were given. Dec. 28th the temperature fell to normal. On Dec. 29th va

tment was commenced, doses 1, 2, 3 minims being given at day intervals respectively, and afterwards weekly doses, dose being increased by 1 minim each week.
n Jan. 14th the symptoms of pain and swelling of the s had cleared up and the patient was discharged from ital on Feb. 2nd, 1928, his joints and general condition being e normal. The patient has resumed his work as chauffeur, has been entirely free from any rheumatic symptoms.

Acute infective arthritis " is really an acute toxæmia with e arthritis as one of its manifestations. When recovery irs from the acute toxæmia it is remarkable in many s how completely the acute arthritis clears up, the joints ming quite normal.

) *Chronic Rheumatism.*—In practically all cases of nic fibrositis and chronic arthritis an underlying infection resent.
areful search for the focus or foci of infection is the first in treatment, and it is of the utmost importance that the tive significance of the various causal foci is appreciated n several are present. Sometimes the clinical symptoms a guide. Thus, in cases of tonsillar and nasopharyngeal in, there is a greater tendency for effusion into joints and ion sheaths rather than for actual bony changes to occur. joint symptoms may clear up to some extent and the rovement be followed by recurrences of the arthritis.
he tonsillar cases are more often seen in young people are more likely to be associated with pyrexial periods.
ases of intestinal origin are often associated with erden's nodes, and with bony changes and synovial iferation—e.g., osteoarthritis and villous arthritis. The plexion is often sallow and a secondary anæmia is mon. The colon is atonic and large, flatulent abdominal ension being present. The urine commonly contains a e excess of indican.
careful clinical examination of the teeth, nasopharynx, ro-intestinal tract, urogenital tract, should be supplete by an X ray examination of the teeth and accessory l sinuses.
some cases an X ray examination of the alimentary is advisable where diverticulitis, chronic appendicitis, ecystitis, or intestinal stasis are suspected.
acteriological examination of the nasopharyngeal swab great value, since in the great majority of cases the causal nism is found in that region, often in almost pure ure. The teeth, tonsils, and antral discharges should be eriologically examined when operative measures have carried out.
acteriological examination of the stools and also of the n washings after an irrigation with normal saline are of e. In over 90 per cent. of cases of chronic arthritis er my care a streptococcus of the viridans group has found in the stools. The streptococcal infection is, oubt, in most cases secondary to a pre-existing dental asopharyngeal infection.
arch should be made for the non-lactose fermenting p of coliform organisms. These are known as the renteric group." and include *Bacillus asiaticus* and do asiaticus, *Bacillus fæcalis alkaligenes* and pseudo lis alkaligenes, bacillus of epidemic jaundice, bacillus gan, the food poisoning group, such as *Bacillus aertrycke, llus enteritidis* of Gaertner, &c.
have found a parenteric intestinal infection associated the streptococcal infection in an appreciable number ases of chronic rheumatism, and I believe that this s a part, perhaps a minor one, in the ætiology of these .
ie combination of a streptococcus infection with a nteric infection in the bowel may produce an enhanced ological effect by symbiotic action. The close association resemblance of the parenteric organisms with the lary dysentery group (which are well known to cause itis) is sufficient to call for careful attention.
here a prostatic cause is suspected, prostatic massage visable before collecting a sample of urine for bacterioal examination.
abs from the vagina, cervix uteri, or uterus may require eriological examination if clinical symptoms suggest it.
almost all cases of chronic rheumatism investigated ie bacteriological department of St. Mary's Hospital eptococcus of the viridans group has been found, and s sometimes accompanied by a hæmolytic streptococcus. streptococcal organism must, I think, be regarded as ne usually responsible for the underlying infection.
e treatment of the underlying infection in chronic involves :—
Removal of gross foci of infection where this can be rtaken without risk or harm. Teeth showing periapical necrosis must be removed.
Where there is marked periodontal disease, or where teeth, or stumps, are present, or unerupted teeth, ntal cysts showing evidence of infection, careful conation must be given to the question of radical surgical ment.

3. When the rheumatic trouble is of a serious type, and where the evidence points to there being an important factor in causation, it is advisable for radical treatment to be carried out.

The proper procedure is, I think, to treat each case on its merits, and to arrive at a decision after considering all the points for and against surgical treatment. No hard-and-fast rules can be laid down for all cases.

The question of surgical treatment of unhealthy tonsils or tonsillar stumps must receive careful consideration. It should be carried out where the clinical type of the disease points to these as the causal factor. Where the rheumatic trouble is serious and persistent and no other important cause is found the indication for surgical treatment is strong and well founded.

Infected maxillary antra require adequate drainage by surgical measures, and infected accessory nasal sinuses may call for operative treatment.

Unhealthy conditions of the colon call for suitable treatment by means of special diet, Plombières douches, colon irrigations, or abdominal massage, &c.

The *underlying infection* can be further treated by measures taken which will raise the immunity of the body, thus *general measures* are of value such as suitable climatic conditions, artificial sunlight, a dietary which is well balanced and rich in nutritive vitamin-containing foods, the supplementing of endocrine deficiencies by administration of suitable doses of thyroid gland, &c.

Special Biological Measures.

Vaccine therapy.—Vaccines should not be given until the case has received the fullest clinical investigation, and any existing foci of infection received appropriate treatment.

An abuse of vaccine therapy is the administration of vaccines to cases of chronic rheumatism where obvious foci of infection are present—for example, septic teeth, septic tonsils, or infected antra. In such cases more harm than good must result.

Vaccines cannot raise the immunity where gross septic foci exist such as these, and they are likely to cause severe reactions and possibly complications such as urticarial eruptions, prurigo, &c.

Vaccines are contra-indicated where "sensitisation" to the toxins from the infection exists. Examples of this are recurring urticarial eruptions. prurigo, certain erythemata, gout, angioneurotic œdema.

In exophthalmic goitre, if associated with chronic rheumatism, vaccines may increase the symptoms of the thyroid disturbance and should be avoided. If nephritis is present, vaccines may cause an exacerbation of the renal symptoms and are dangerous.

If retinal vascular lesions of toxic origin are present in association with chronic rheumatism vaccine treatment is best avoided owing to the risk of further retinal damage.

Vaccines are of value in cases of chronic rheumatism where any gross focus of infection has been removed and where the toxic process is being carried on by the chronic infection of a mucous surface with its accompanying glandular tissue. Thus, in chronic intestinal or nasopharyngeal infections vaccine treatment may be used to supplement the other measures.

Complete bacteriological examination should be made of all the possible channels of infection and an autogenous vaccine prepared. This is usually one composed of streptococcal organism of the viridans group. The streptococci from different foci may with advantage be combined in suitable proportions.

For reasons already quoted it is advisable to commence with a vaccine of weak strength, say 5,000,000 per c.cm., and, after a preliminary course of this, to proceed with a stronger vaccine of, say, 50,000,000 per c.cm., giving carefully graduated doses. By this method of procedure unpleasant reactions are obviated, and the occurrence of harmful complications is guarded against.

Any evidence of symptoms of sensitisation are an indication for discontinuance of this line of treatment. In my experience effective immunisation is more readily obtained by carefully graduated doses of a weak vaccine than by giving the large doses advocated by some.

Where a parenteric intestinal infection exists in company with the streptococcal, and when a positive agglutination test is given by the patient's blood serum and the organism found, it is often advisable to give a short course of inoculations with the autogenous parenteric vaccine. This may be made of strength 50,000,000 per c.cm., and weekly doses of 2, 4, 6, 8, 10 minims given.

At the end of this course a further bacteriological examination of the stools should be made to determine if the infection still persists.

Stock streptococcal vaccines made from other patients are, in my experience, far inferior to autogenous vaccines, and are not recommended for use.

Antistreptococcal serum is not indicated in cases of chronic rheumatism.

Protein shock therapy, such as injection of peptone solution or of typhoid vaccine has, in my experience, been disappointing. In some cases, definite temporary improvement has occurred, but this has often been followed by a relapse into the former condition.

The Action of Vaccines in Chronic Rheumatism.

Properly graduated doses of an autogenous vaccine are of value in raising the immunity of the body to the causal toxæmia, and they, therefore, promote an improvement in the general condition of health.

The effect of an inoculation is to cause some local reaction in the affected joint. The increase in blood-supply consequent on this has a beneficial local effect. Vaccines are undoubtedly helpful in promoting absorption of inflammatory exudates. It cannot be claimed that they will effect improvement in the bony changes which have occurred in a damaged joint.

In some cases, such as old-standing osteoarthritis of the hip, vaccine treatment is undoubtedly of value in relieving pain and in checking the progress of the arthritis.

Vaccine treatment can with advantage be combined with other methods of treatment.

A BABIES CLUB.

AN infant welfare centre on a self-supporting basis has been opened at Stanley Cottage 35, Danvers-street, Paulton's-square, Chelsea. Dr. W. H. L. McCarthy, medical officer of health for Chelsea, is on the committee of management, and Dr. Harold Waller is medical officer to the centre. The object of this "Babies Club" is the instruction in the hygienic management of young children of mothers of the professional class who cannot afford repeatedly to call in a doctor for purposes of general supervision. Any mother wishing to bring her child to the club must first inform her family doctor of her intention and obtain his coöperation. Cases of illness discovered at the club will be referred back to him. Subscribers are not at liberty to ask the medical officer to attend their children in case of illness in their own homes; he can do so only at the request of their own doctor. Home visits by the nurse-superintendent are, however, covered by the subscription. The fee payable is five guineas per child for one year, or seven and a half guineas for two children in one family. The estimated expense of running the club is £750 per annum, and the estimated annual income, on the basis of one clinic a week and 150 members, is £787. There has been a steady increase in numbers since the club was opened in November last. The capital necessary to start the venture was provided from private loans, on which 5 per cent. income is to be paid if funds permit; it is hoped to repay the loans out of the funds of the club. £300 is still required for equipment and running expenses until the full complement of members is reached.

THE QUEEN'S NURSES IN IRELAND.

FOR some months past there has been anxiety among those interested in the admirable work of the Queen's nurses (better known as Jubilee nurses) in Ireland. Since the institution was founded about 40 years ago for the nursing of the sick poor in their own homes, the nurses in Ireland have been under the control of a Central Council meeting in Dublin, which was subordinate only to the Executive in London. All parts of Ireland have been represented on the Central Council, and no complaint has ever been made that partiality was shown toward one district rather than another. A few months ago, however, a sum of money raised in Northern Ireland to found a memorial to Queen Alexandra was offered to the Belfast Advisory Committee to extend the work of the nurses in Northern Ireland, on condition that a Council should be established for Northern Ireland entirely independent of the existing Council for Ireland. The proposal, warmly championed by Lady Londonderry, was opposed throughout the greater part of Ireland, and nowhere more determinedly than in some of the counties of Northern Ireland. After considerable controversy the proposal came before the Executive in London, which appointed a subcommittee, under the chairmanship of Sir William Hale-White, to inquire into the matter. The subcommittee took evidence in favour of and against the proposal, and has now reported against it. In the opinion of the subcommittee no one in the Irish Free State favoured the proposal, and many in Northern Ireland disliked it. The large majority of those interested in the work of the nurses in Ireland were definitely against a change. Moreover, the size of Northern Ireland would not justify the unnecessary expense of a Council, with offices and training establishment. The subcommittee has made certain suggestions in the endeavour to meet specific criticisms made by Lady Londonderry and her friends, hoping thereby to prevent any injury being done to work of the nurses, which is universally appreciated. will be the hope of many in Ireland who do not see political divisions should be permitted to interfere charitable activity.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the committee 37 application assistance were considered, and £520 16*s.* voted to 32 c As the holiday season approaches appeals come from wi and others asking for help towards the holiday expense children of medical men. An appeal is made to all sympathise with the children's need during the sun holidays, to support this work of the Fund by sending scriptions to the hon. treasurer, 11, Chandos-street, Ca dish-square, London, W. 1. The two following cases quoted as an example:—

Mrs. X, whose husband, M.B. Lond., is now in a mental as a free patient, has charge of three children. She has no in other than what she can make by needlework. The eldest a girl of 12, is educated by her godmother. The Fund pay school fees for the son, age 9; the third child is at home. applicant writes: "I had a breakdown in the middle of and have been able to do so little work since that the seven w summer holidays is rather a nightmare to me as regards fina A grant of £7 10*s.* was voted.

M.R.C.S. who died in 1921, leaving five children, ages 12 One is at Epsom College, one at a girl's school, and thr orphanages. These children are dependent on relatives wh unable to contribute. Fund voted £15 for the children's holi

Other cases helped were:—

L.M.S.S.A. at the age of 70, who was in practice for 21 broke down in health in 1920. Ill health and ill luck foll each other. He is suffering from bronchitis and diabetes unable to work. He is entirely without means except the week which his wife is able to make as a cook-housekeep some service flats. Voted £40.

L.R.C.P. & S., aged 72. The applicant is a widower, r blind with diabetes, and is confined to his bed. His income Old Age Pension £26 and Epsom Pension £40. Fund grante making his total income £91; his rent for his room is £26.

L.R.C.P. & S. Edin., aged 68, whose wife is delicate, age had to give up his regular practice 24 years ago, since wh has worked as locum tenens. He has been handicapped health, and during the last nine months has been unable to and got into financial difficulties. Voted £40.

L.R.C.P. &. S., died in 1926 at the age of 39, leaving a w and two infants ill provided for. The fund assisted the wid 1927. In May, 1928, the widow died, leaving the two orp aged 8½ and 7½. Assistance was asked from the Fund. The has been handed over to our Ladies' Guild to administer.

THE WELLCOME HISTORICAL MEDICAL MUSE

THE souvenir programme issued in connexion wit visit paid by the African Society on July 11th to the come Historical Medical Museum takes the form o attractive little book. This contains an illustrated logue, and an account of the inauguration ceremony in and of the speeches on Oct. 14th, 1926, when the reorga and extended museum was reopened by Sir Hum Rolleston. This is one of the permanent exhibitio London that deserve a visit from doctors. The ha primitive medicine and the alchemy room will a especially to those interested in ancient superst while the development of pharmacy is neatly shown i models of the chemist shops of different ages. Speci pictures, and statues are displayed in other rooms. museum is at 54A, Wigmore-street, London, W.

A CONVENIENT HÆMOGLOBIN CHART.

WE have received from Messrs. Reed and Carnr handy hæmoglobin chart, which consists of a card disc pinned by a paper clip to several layers of blot paper of larger diameter. These layers are separated each other by grease-proof paper. The disc is di into seven sectors of varying tints of red. If a dr blood is placed on the filter paper, the chart may be ro while the blood is still moist, until the colour is ma by one of the sectors which are numbered 10, 30, 5 80, 90, and 100, indicating the hæmoglobin perce represented. When the first piece of blotting pape been used it can be thrown away, and the next lower when occasion demands. As a simple hæmoglobino this chart should be quite useful. It is unfortunate the letterpress describing its mechanism claims rathe much. The suggestion is that the presence of moderate, or severe anæmia can be determined merel consulting the chart, whereas, of course, it is not so the percentage of hæmoglobin, but the colour-index, is the relation of hæmoglobin to the number of corp in the blood to be tested, that gives a valuable indic of the type and degree of anæmia in any subject. Th no reason, however, why this hæmoglobinometer s not be as useful as more complex ones, provided it i expected to take the place of a red cell count.

An Address
ON THE
EPIDEMIOLOGY OF CHILDREN'S INFECTIOUS DISEASES.*

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A NOTABLE change has taken place during recent ears in the conception of epidemic diseases, a change hich is of importance not only from a theoretical t also from a practical point of view. The classical ophylaxis of epidemic diseases has been established the basis of the doctrine of Robert Koch, that the thogenic microbes are only to be found in those seases which they have caused, while in healthy ople they are either absent or found only as an ception. A sharp line can be drawn between these thogenic microbes and the group of saprophytes, hich, lacking any specificity, are found on the skin d in the mucous membranes of any person. The odern doctrine holds that between pathogenic icrobes and saprophytes there is only an artificial antitative distinction. We know that in a con-derable number of diseases the causative microbes e pathogenic only for a very limited number of man beings, and are but inoffensive saprophytes r the majority. Infection is therefore not identical ith infectious disease, save in a very few cases. We ve to differentiate between infection followed by sease and infection without disease. The latter can called "latent infection" and, in its propagation, latent epidemisation" ("latente Durchseuchung"). is easy to understand that the extent of "latent idemisation" is of the utmost importance for eventive measures. We must therefore get an act idea of the extent of the latent epidemisation each infectious disease. In an extensive latent idemisation we may assume the following two ctors: (1) a very small inborn susceptibility of dividuals to the contagious disease; (2) an extensive read of the specific microbes. The first statement es not need any interpretation. If the microbe is virulent for man that infection coincides with the mptoms of disease, we experience a manifest, not latent epidemisation—for example, measles.

Latent Immunisation.

The spread of microbes depends upon the manner their excretion. The latter is of the greatest portance in diseases conveyed through droplet fection, and in these latent epidemisation plays an portant part. The practical importance of latent idemisation lies not only in the prophylaxis of idemics, but also in a phenomenon which I call latent immunisation." Latent infection, as well as covery from an infectious disease, may confer sting immunity. In a large population latent munisation must naturally be a function of age. he older an individual the more frequently he has en exposed to latent infection, and the higher erefore is his degree of latent immunisation.

We have known for a long time that the insusceptibility of adults to measles is due to the fact that almost eryone gets over them in youth. During the easles epidemic on the Faroë Isles, all the inhabitants, respective of age, were afflicted. Such an explanation is impossible for acute poliomyelitis, diphtheria, d scarlet fever. Since the number of children who ntract these diseases is comparatively small, it is fficult to understand the immunity of adults. The planation is that latent epidemisation takes the ace of the disease. The immunity of adults towards ildren's infectious diseases is not inborn but is the result of latent epidemisation. The restriction of certain infectious diseases to the period of infancy is explained by the enormous extent of manifest or latent epidemisation in these diseases. Since this extent depends on the method of propagation of the microbes, it is not an accident that all infectious children's diseases are spread by means of droplet infection, whereas infectious intestinal diseases are not restricted exclusively to infancy. The relative resistance of adults towards the saprophytes of the mucous membranes of the upper respiratory tracts—the streptococci and pneumococci—is acquired by latent epidemisation. Among primitive races and people living far from civilisation very dangerous contagious diseases are caused by these organisms—e.g., pneumonia among the negroes in the mines of the Transvaal and the black workmen of the Panama Canal, and, during the war, among American soldiers recruited from country districts. The infant responds to an infection like an individual of a primitive race. The malignancy of measles in children under three does not depend upon the virus itself but upon the mixed infection with streptococci, which causes severe septic and contagious bronchial pneumonias. The course taken by children's infectious diseases is often dominated by these mixed infections. The numerous trifling infections which take place during childhood confer an immunity to pneumococci and streptococci, transforming them in the adult into inoffensive saprophytes.

We have at our disposal four methods for the study of infectious diseases: (1) bacteriological analysis; (2) immunity reactions, such as the Schick test in diphtheria and the Dick test in scarlatina; (3) the epidemiological method (statistics); (4) the methods of experimental epidemiology—the newest method taken by epidemiological science. This development we owe to the studies of Topley in England, and of Flexner, Amoss, and Webster in U.S.A.

ACUTE POLIOMYELITIS.

Acute poliomyelitis, which lately has attracted especial interest, shows the strongly marked characteristics of children's infectious diseases. In 1840 the German physician Heine was the first to outline the pathography of poliomyelitis as an entity. At that time only a few cases had been recorded, and nobody thought that the disease was contagious. In 1895 Medine referred to an epidemic in Sweden; there were only 43 cases. In 1905 a second epidemic of 1000 cases occurred in Sweden, and soon spread all over Norway, Germany, Austria, and America. Since that time poliomyelitis has never completely disappeared. It was not, however, until 1910 that it rose to a pandemic of considerable proportions, which lasted three years in Sweden and affected 10,000 persons. This outbreak was followed by the spread of the disease almost all over the world. In Germany we have noticed an increase in the number of cases, and it may be that we are on the eve of a new outbreak.

Poliomyelitis epidemics follow a very characteristic course. The spread of most contagious diseases is favoured by communication and has a direct connexion with the density of population. Poliomyelitis especially affects lonely and remote districts. The fact that the majority of cases are isolated and have no obvious connexion with other cases seemed to contradict the contagiousness of the disease, but during epidemics the contagiousness rises considerably. During the Swedish epidemic of 1910–1913, according to Wernstedt, 18·6 per cent. of the cases were group cases in one house, while 38 per cent. were caused by infection in hospitals. On account of these peculiarities poliomyelitis has been held for a long time to be infectious, but not contagious. Some authors supposed that the virus lived in the earth, and thus explained the spread of the disease in country districts. Others thought that it was propagated by insects. This opinion was supported by the seasonal incidence curve. While most children's diseases have their annual maximum in the autumn, poliomyelitis is a summer disease, at its maximum in July and

*Delivered in London at the invitation of the Health Organization of the League of Nations at an International Course for Medical Officers of Health.

August. But as in winter epidemics the number of cases is considerable, we must exclude an exclusive or prevailing participation of insects in the propagation of the disease. The opinion that poliomyelitis is a primary disease of domestic animals is without foundation.

It was a valuable advance when Wickmann laid all these doubts at rest and proved, by an exact cartographic study of the Swedish epidemic of 1905, the contagious character of the disease. The epidemic arose from isolated centres scattered all over the country, but the cases showed a pronounced group-formation round these first centres, from which they afterwards spread in a radiate form, following the trade routes. It was Wickmann who made the important observation that connexion between the single cases could often be traced through abortive cases without palsies.

Remaining contradictions were solved by Wernstedt's epidemiological studies during the Swedish epidemic of 1910–1913. When Wernstedt, following the example of Wickmann, made an exact cartographic note of the cases of this epidemic, he was surprised to discover that all the districts where cases of poliomyelitis had occurred in 1905 were free from infection during the epidemic of 1910. Sometimes these districts were quite surrounded by the epidemic, and were therefore proved to be immune. This immunity could only be due to the epidemic of 1905, but this fact is difficult to explain. Poliomyelitis, though it travels through countries at a rapid rate, affects few individuals in each country. For instance, the cases in the districts visited by the epidemic of 1905 numbered but 1 to 2 per cent. of the population; nevertheless, the whole population had become immune. The entire population must, therefore, have come in close contact with the microbe without being affected. This, then, is the first example of an extensive latent epidemisation. The hypothesis of latent epidemisation readily explains the other peculiarities of the epidemiology of poliomyelitis, including: (1) the dependence of the spread upon the density of population; (2) the incidence of the epidemic at different ages.

The more congested the population of a district and the more active its communication with its neighbours, the easier is the spread of the ubiquitous poliomyelitis virus in the intervals between epidemics, and the more readily will it latently infect and immunise the population. On the other hand, the population of remote districts is deprived of this preventive effect and is therefore much more exposed to infection. The frequency of group cases in a household will be the higher the greater the number of susceptible persons united under the same roof. Table I. demonstrates this :—

TABLE I.

Size of town.	Incidence-rate (per cent.).
More than 100,000 inhabitants	.. 8·8
100,000 to 10,000 inhabitants	.. 9·4
Country town, less than 10,000 inhabitants	.. 13
Country	.. 20·7

Poliomyelitis is generally considered to be essentially a disease of the earlier years of life, but its age-incidence depends also in a very characteristic manner

TABLE II.

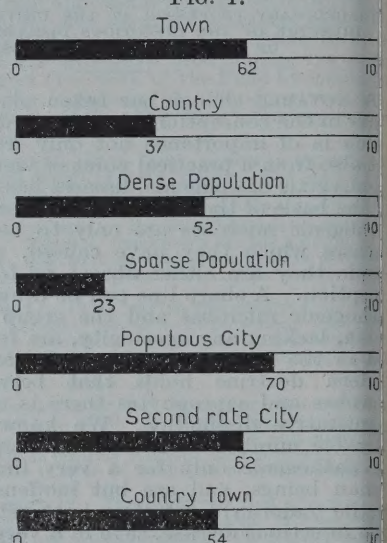
Age-group.	Town.	Country districts.	Population.		Populous city.	Small town.	Country town.
			Dense.	Sparse.			
	%	%	%	%	%	%	%
Years 0–5	61·8	37·5	51·8	23·0	70	61·8	54·2
Over 6 ..	38·2	62·5	48·2	77·0	30	38·2	45·8

upon conditions of local distribution and traffic. If the population is not dense and communications not developed, poliomyelitis ceases to be a children's disease and more adults are affected. This will be seen from Table II. and Fig. 1.

In districts where the poliomyelitis virus has lit or no opportunity to spread, there is a high suscep bility among adults. The more the population exposed to the virus, the more is the susceptibili restricted to the earliest years of life. Should t hypothesis prove to be correct, there should be difference in susceptibility between young and o

where poliomyelitis is imported into a population that has never been in contact with it before. A. Müller has reported an outbreak of poliomyelitis on a Pacific island, during which 37 per cent. of the natives were affected, and the maximum incidence was between the ages of 12 and 40.

FIG. 1.



Age-incidence of poliomyelitis in differe districts. The black rectangles represe the age-groups from 0–5 years, the whi rectangles the ages over 6 years.

I have restricted myself to the Swedish epidemics, because their epidemiological laws have been the most thoroughly studied. These significant results have been obtained from epidemiological statist alone.

Ætiological Investigations.

To Landsteiner, Levaditi, Flexner, Wiesner, Röm and others we owe the discovery that poliomyeli may be transmitted to the lower monkeys by subdu inoculation of the brain and spinal cord of poliomy litis cases. Flexner and Amoss were able to prove experiments the highly important epidemiological fa that the virus is also to be found in the nasal secreti of the infected animals, and that infection could induced by dropping the virus on the intact muco membrane of the nose. These results suggest that man the mucous membrane of the nose is the mo important portal of entry as well as the chief path elimination of the virus, and we may further suppo that case-to-case infection takes place by drop infection. This statement is in harmony with existi epidemiological conceptions. Kling and Wernste have demonstrated the poliomyelitis virus in the na secretion of man, but it is doubtful whether this is t only mode of virus transmission. Since in the beginni of poliomyelitis diarrhœas are not rare, it is plausi that the virus may be excreted in the fæces. Flexn and Amoss have found it in the excreta of monke but droplet infection is in all probability the mo important factor, because in this way the virus ga a far wider propagation. Spontaneous fluctuatio of virulence observed in poliomyelitis virus by Flexn and Amoss are of great interest and may lead to explanation of the coming and going of epidemics.

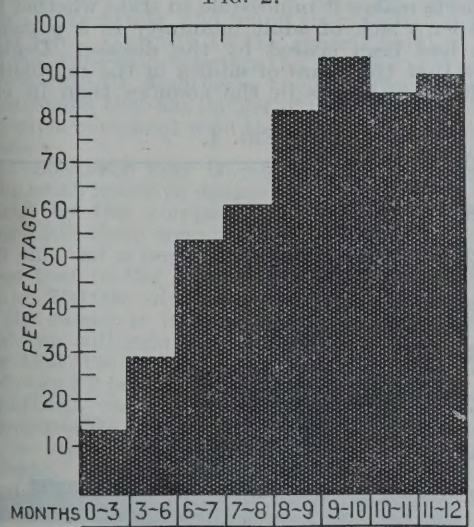
DIPHTHERIA.

This disease attracts especial attention nowada because there are signs of a threatening increase several capitals, such as Paris, Budapest, and Berli Since 1926 the number of cases in Berlin has double Far more alarming, however, is the maligna character suddenly taken by this disease. Where the percentage of diphtheria mortality in my hospi used to be 4–7 per cent., since 1926 the mortality h risen to 25–35 per cent. Even patients inject with large doses of serum on the first day ha

ccumbed within 24 hours. In order to answer the uestion whether this means the beginning of a new ndemic we must glance at the epidemiological story of diphtheria. Since 1894 a decrease has been oticed all over the world. As diphtheria serum was scovered in 1894, the decrease of mortality has been tributed chiefly to this factor. This, however, nnot be the only one, because the morbidity also ows a striking decrease which cannot be influenced the serum. Some writers explain the decrease diphtheria morbidity by modern prophylactic easures, but a comparison of the decrease of diphteria with the decrease of other infectious diseases sts doubt on this explanation. In the period 66–1896 the decrease of scarlet fever in England as more marked than that of diphtheria, notwithanding the fact we did not know anything about the rus of the former, and had not therefore the means organising prophylaxis. It seems necessary to nphasise the fact that the decrease of diphtheria is ot entirely due to therapeutic or prophylactic easures, so that the outbreak of a new epidemic is ways possible. The fluctuations of the epidemic read may depend upon the virulence of the bacillus nd the susceptibility of the population. During the resent epidemic in Berlin Dr. H. Schmidt, of Marburg, roved the virulence of bacilli cultivated from severe ases. After an injection of 0·05 c.cm. of a broth ulture of living diphtheria bacilli guinea-pigs died ithin 24–36 hours.

Nevertheless, I doubt whether the fluctuations of irulence of diphtheria bacilli are responsible for the oming and going of the diphtheria epidemics. It eems very difficult to explain the striking and orderly ourse of diphtheria by the fluctuation of virulence lone. Diphtheria has a typical time-curve, as

FIG. 2.

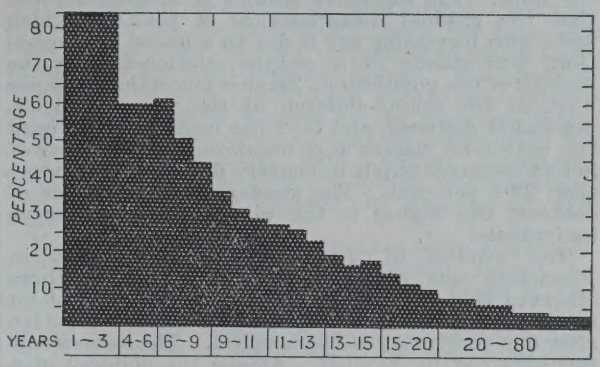


Percentage of positive Schick tests in first year of life.

ottstein has pointed out, with a constant ebb and ow. It appears as an epidemic extending over some 0 years, disappears for decades, and then begins nother period of 30 years.

The susceptibility of a population depends first upon nborn resistance, and secondly upon an immunity cquired by manifest or latent epidemisation. xperimental and epidemiological observations prove nat there are inborn differences in resistance to iphtheria. Hirtzfeld has stated that the antitoxic tre, one of the most important factors of diphtheria esistance, represents an inborn quality, hereditary ke the blood group. Gottstein, in his epidemiological udies, expresses the opinion that the natal predisosition of generations to diphtheria is subject to rderly fluctuations. In the epidemic course of diphtheria the most susceptible individuals succumb to the plague, and the surviving individuals have a high inborn resistance. The immune generation transmits this power to its descendants, and thus a series of non-susceptible generations comes into the world after a severe epidemic, and represent an unfavourable soil for the development of the microbes. In the course of decades susceptible generations arise from the crossing with individuals who had been

FIG. 3.



Percentage of positive Schick tests at various ages.

spared by the epidemic, and under these conditions diphtheria can make its reappearance. There is no doubt that Gottstein's theory explains in a plausible way the orderly coming and going of epidemics. The facts must, however, be more complicated. One predominating factor of the highest importance for the susceptibility of the population has not been considered by Gottstein, and that is latent epidemisation. It stands to reason that latent epidemisation increases with an increase of diphtheria cases; that the spread of the disease is followed by an increasing immunisation of the population, which finally stops the epidemic. With the disappearance of diphtheria cases latent epidemisation also disappears, and generations susceptible to diphtheria gradually reappear. Latent epidemisation produces the same effect as selection by disease.

We can recognise, therefore, three factors which may explain the coming and going of epidemic diphtheria: (1) fluctuations of the virulence of Loffler's bacilli; (2) fluctuations of the natural resistance, depending upon selection; (3) fluctuations of immunity gained by latent epidemisation (latent immunisation).

What share these three factors have in the genesis of diphtheria epidemics is a very interesting problem of epidemiology which has been but little studied.

The Extent of Latent Epidemisation in Diphtheria.

We have three different ways of estimating this: (1) the immunity proof (Schick test); (2) the estimation of the spread of diphtheria bacilli by bacteriological methods; (3) epidemiological statistics.

TABLE III.

Mth.	Per cent.	Yr.	Per cent.	Yr.	Per cent.	Yr.	Per cent.
0–3 ..	15	1–3 ..	83·2	10–11 ..	29·3	16–20 ..	14·2
3–6 ..	30	4–6 ..	58·6	11–12 ..	28·2	20–30 ..	12·2
6–7 ..	56			12–13 ..	26·6	30–40 ..	10·6
7–8 ..	63	5–6 ..	60·3	13–14 ..	23·1	40–50 ..	7·8
8–9 ..	83·8	6–7 ..	50·4	14–15 ..	19·7	50–60 ..	6·4
9–10 ..	93·1	7–8 ..	43·5	15–16 ..	17·8	60–70 ..	4·9
10–11 ..	87·0	8–9 ..	36·6	16–17 ..	18·4	70–80 ..	4·9
11–12 ..	91·1	9–10 ..	32·2				

Mth. = months. Yr. = years.

The Schick test has been carried out on millions of children in America, England, Holland, and Russia, and the theoretical elements of the reaction are, therefore, generally known. After an intradermal injection of one-fiftieth of a lethal dose of diphtheria toxin, as tested on guinea-pigs, all persons possessing no diphtheria antitoxin in their serum show a local

inflammation, whereas those people who have more than one-thirtieth of an antitoxin unit in their serum show no reaction. Parker and Zingher showed that the positive result of the Schick test depends first of all on the age. (See Table III. and Figs. 2 and 3.)

The number of new-born Schick-positive individuals is small. It attains the maximum at the end of the first year of life, and then sinks rapidly and progressively. The negative test in the new-born infant depends on the transmission of antitoxin from mother to infant by way of the placenta, and perhaps with the milk. The extensive studies of Zingher showed that the gradual disappearance of positive Schick tests with increasing age is due to a latent epidemisation, and stands in a certain relationship to the density of the population. Zingher found that 87·3 per cent. of the school-children in the poorer, thickly populated districts, and 50·2 per cent. of those from the well-to-do classes were negative. The number of Schick-negative pupils in country districts is not more than 23·1 per cent. The greater the possibilities of contact, the higher is the rate of Schick-negative individuals.

The studies of Joannon and Lerebouillet in Roumania are of great interest. These authors observed that all children showing a positive test on reception in a surgical department became negative after one year's stay at the hospital. The same result was obtained by Zingher. Among the children of a home he found that 33·3 per cent. of those who had been less than three months in the home were Schick-positive; of the older inhabitants not more than 3·4 per cent. These observations leave no doubt that the disappearance of positive Schick tests, corresponding to increasing age, is due to a latent epidemisation of the population by the diphtheria bacilli. A latent epidemisation of this extent cannot be accounted for by the number of diphtheria cases. I have calculated that, as far as Berlin is concerned, some 3·3 per cent. of the 10-year age-group have overcome diphtheria, but not less than 70·7 per cent. of this group show a negative Schick test. In other words, 67·4 per cent. of the population lose their susceptibility towards the diphtheria toxins at the early age of 10 in the way of temporary carriership.

Bacteriological Results.

The results of the Schick test show a degree of latent epidemisation that proves the diphtheria bacillus to be ubiquitous. This ubiquity, however, although accepted by Roux has been rejected in Germany by Robert Koch and his adherents. The answer to this question depends upon another problem, whether the pseudo-diphtheria bacillus, a very common saprophyte, and the diphtheria bacillus are identical or two very different species. No compromise has yet been reached between unitarians and dualists. I prefer to restrict myself in my epidemiological discussions to microbes which are generally recognised to be pathogenic—that is to say, to the virulent diphtheria bacillus.

We are well informed about the percentage of virulent diphtheria carriers in schools and barracks. The rate obtained depends on whether or not diphtheria cases have occurred in these institutions. In schools the average rate of carriers amounts to 10–20 per cent., but can be much higher. Seligmann, for instance, found that in a class where eight cases of diphtheria had been suspected, 33 out of 46 children were carriers. It is of much greater importance from an epidemiological point of view to know the number of diphtheria carriers in a dense population where cases of diphtheria have not occurred.

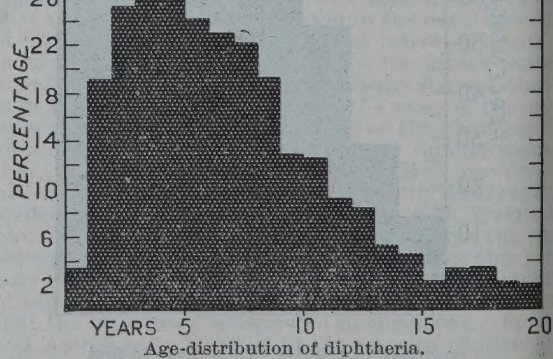
The very large number of investigations carried out in schools all over the world give a maximum of 5 per cent. and a minimum of 0·8 per cent. We can, therefore, consider that the average number of virulent carriers amounts to 2·5 per cent. Positive results are much more frequent if we analyse the nasal secretion of babies. Out of 55 babies Kirstein found 27 per cent. to be carriers of virulent diphtheria bacilli. If they were investigated daily from the first day of life, the rate rose to 85 per cent. Similar figures have been reported by Wiltschke. If w confine ourselves to the rates obtained for schoo children and adults they will appear at first sight t be low. These rates seem to confirm those author who deny the ubiquity of the diphtheria bacillus but they are the results of one single investigation We obtain quite different figures if we ask how man of the children will become carriers in the course of year. It is known that diphtheria bacilli do not liv long in a healthy organism, and if we suppose that o the average each school child carries diphtheri bacilli for four weeks in a year, we are allowing a ample margin. In order to maintain the quota o 2·5 per cent. of carriers we must multiply this figur by the number of months in the year, which give the proportion of carriers among school-children a 30 per cent. If we apply these results to the entir population, we come to the conclusion that in on year about one-third of the population is infected wit diphtheria bacilli without contracting the disease This assumes latent epidemisation, which is practicall equivalent to the ubiquity of the diphtheria bacillus

TABLE IV.—*Giving the Age-distribution of Diphtheri*

Age in years.	Per cent.	Age in years.	Per cent.	Age in years.	Pe cen
0–1	3·8	7–8	22·7	14–15	4·
1–2	18·4	8–9	19·2	15–16	2·
2–3	25·9	9–10	12·4	16–17	3·
3–4	26·3	10–11	12·3	17–18	3·
4–5	30·3	11–12	9·4	18–19	2·
5–6	24·9	12–13	8·5	19–20	2·
6–7	23·3	13–14	5·5		

Diphtheria is a children's disease (Fig. 4), but th correspondence of Table IV. with the curve of positiv Schick tests (see Figs. 2 and 3) proves that the immunit of the older age-groups is not physiological but acquire by latent immunisation. The ubiquitous spread o diphtheria makes it impossible to state whether ther would be a lack of adult immunity in a populatio which had been spared by the disease. Degkwit asserts that the share of adults in the morbidity o diphtheria is higher in the country than in cities

FIG. 4.



Age-distribution of diphtheria.

In Berlin the age-groups above 15 show a diphtheri morbidity of 17·1 per cent., whereas in the countr town of Greifswald and its rural surroundings th morbidity of these groups amounts to 33·3 per cen Statements regarding the influence of density o population and social conditions are very contradi tory. The general opinion inclines to the belief tha the spread of diphtheria is favoured by density o population, which increases the possibilities of contac The observations of Reiche in Hamburg are ver valuable. The conditions there are favourabl because the parts of the town inhabited by well-to-d people are isolated from those of the poorest classe In the period from 1901–1914 the mortality was rich, 5·9 per cent.; poor, 16·6 per cent. Th morbidity-rate, however, was in inverse ratio: rich 118·4 per cent.; poor, 86·9 per cent.

We should not, however, consider these rates an expression of the real case-incidence, because well-to-do families the physician is consulted for hter cases.

If contact be the predominating factor it is obvious at the frequency of illness should be less in the ell-to-do quarters than in thickly populated areas here the hygienic conditions are unfavourable. The cal distribution of cholera among the rich and the or in 1892 is an example of an illness where contact of predominating importance, but where latent idemisation has no great effect. The following ures give the number of cholera cases arranged cording to the income-tax classes :—

Income.	Total cases.	Deaths.
600–1200 Mk.	116·84 per mille ..	59·69 per mille
More than 5000 Mk. ..	24·63 „ ..	13·08 „

The relations between density of population and phtheria morbidity find an adequate explanation ily if we accept the theory of latent epidemisation.

Practical Conclusions for Prophylaxis.

Our sanitary precautions are based upon the belief at we are able to find the carriers by bacteriological sts and make them harmless. In special cases, such the family, schools, and military barracks, these easures are possible and even necessary, but it is ite uncertain whether we should be able to achieve y results worth mentioning in an epidemic, seeing at in one year 30 per cent. of the population are mporary carriers. We lack information as to the mediate danger represented by healthy carriers. e have every reason to believe that a carrier is nerally much less infectious than a patient. Doull d Hilario Lara determined the proportion between e cases infected by carriers and by diphtheria tients respectively, and found them to be as one to ne or ten. Contrary to the general opinion, they nd no difference between the carriers of virulent d non-virulent diphtheria bacilli. They came to e conclusion that the danger of infection by carriers negligible compared with the danger of infection by tients.

This conclusion may be admitted for single cases, t the small infective danger of carriers is more than lanced by the comparatively enormous number. ring 1905 there were 2327 cases of diphtheria in rlin amongst a population of 2,100,000. We may ppose that in the course of the year some 30 per nt., or 700,000 of the population, were carriers ; ce the carrier is 10 times less infectious than the tient, we will reduce the number to 70,000. This ans that the patients suffering from diphtheria ased only 3·2 per cent. and the carriers 96·8 per cent. diphtheria cases. The conclusions drawn are of ch importance for public health measures that we ist be very cautious and prove them by further perience. Similar figures are given by other demiological observations. We can obtain an proximate measure for the number of case-to-case ections if we state how many of a given number of phtheria cases are produced by contact in the family. e League of Nations made inquiries among different tions, and the material is represented in Table V.

TABLE V.

Author.	Total of cases.	Percentage of contacts.
Moldovan (Roumania)	6,341	1·9
Hachta (Prague)	12,126	1·61
Intrario (Italy)	19,004	2·48
Jötta (Holland)	5,130	6·55
Chodzko (Poland)	—	2·5
Sweden	—	3·3
Bulgaria	—	2·15
Norway	—	17·6

Excluding Norway, the family contacts amount to average of 2·9 per cent. Since contagion is nowhere easy as in the family, we see that the number of e-to-case infections does not amount to more than per cent. of the total of diphtheria cases, almost same as the 3·2 per cent., calculated as caused by patients. If 97 per cent. of all diphtheria cases are infected by carriers, it is hopeless to fight against a diphtheria epidemic by finding out carriers and isolating them. In epidemics a higher rate takes place in the family contacts. Gottstein's observations on diphtheria in 1895, the climax of an epidemic, showed that the number of family contacts amounted then to 17·6 per cent. of the total of all diphtheria cases.

Active Immunisation.

It is clear why, in spite of the most intensive sanitary precautions, the decrease of diphtheria has been less than that of other diseases, the agents of which have up till now not even been discovered. The classical methods of Koch's prophylaxis, which have proved of use in infectious diseases of the digestive tract, seem to be of no value in diseases transmitted by droplet infection. The fight against diphtheria epidemics is only possible by active immunisation. The methods used in England and America are well known.

More than 1,000,000 children have been immunised against diphtheria, and the material should be sufficient to give an estimate of the value of the method, if we take into consideration the Schick test alone. It seems possible to change a positive Schick test into a negative one in 80–90 per cent. both with toxin-antitoxin mixtures and the anatoxin of Ramon. We are entitled to suppose that these children are, with few exceptions, also immune to diphtheria. But what about the 10–20 per cent. of children who cannot be immunised successfully? Is not this inability to produce antitoxins after immunisation the expression of a special lack of resistance to the natural diphtheria infection? If this is so is not the total of diphtheria cases exclusively recruited from this group of bad antitoxin formers? The number of diphtheria cases is extremely low in proportion to the total of the population; it varied in Germany during 30 years between 0·1–0·6 per cent. The group of bad antitoxin formers is therefore sufficient to provide all the diphtheria cases. This is not a mere hypothesis, for Reich and Weiss have stated that of diphtheria convalescents not more than 50 per cent. become Schick negative. It is reasonable to suppose that the diphtheria patient falls ill because he is unable to form antitoxins. Should this supposition prove correct we cannot rely on the Schick test. The children who are actively immunised are the ones who would become negative in any case through contact with the bacilli, without contracting the illness, and the number of really susceptible individuals is, therefore, not reduced.

The value of immunisation as a preventive measure against diphtheria can only be seen by comparing morbidity statistics among immunised and non-immunised children without considering the Schick test. Unfortunately, although the number of inoculated children is high, the statistics at our disposal are very poor. The only extensive statistics have been made by Park, and refer to 90,000 Schick-tested children. Of these 56,000 were originally negative; 33,000 who had given a positive reaction were actively immunised. In the first group there occurred five cases of diphtheria, in the second group nine cases. Hence, even after artificial immunisation the degree of immunity is lower than in natural immunisation by latent infection. To estimate the value of active immunisation Park controlled these results by a second group of 90,000 children, neither tested nor immunised, in which there occurred 56 cases of diphtheria. In comparing these numbers we must assume that the second group also contained 56,000 Schick-negative children with five cases of diphtheria. Therefore, comparing 33,000 non-immunised Schick-positive children with 51 cases and the same number of immunised originally positive children with nine cases, we find that the number of cases among the non-immunised is five and a half times as great as among the immunised. The American statistics show, therefore, the practical value of active immunisation. Similar statistics should be published in

countries where immunisation is commonly in use, and especially in those where diphtheria is widespread and dangerous.

Scarlet Fever.

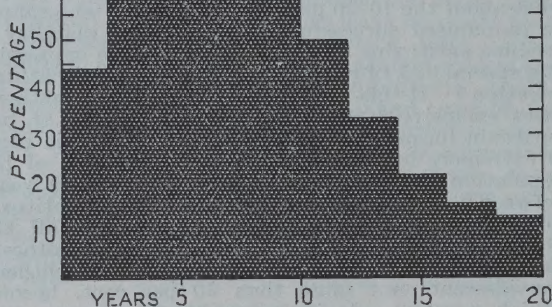
That the epidemiology of scarlet fever also depends upon the extent of latent epidemisation can be seen from the results of the Dick test. Table VI., compiled by Zingher, shows that the result of this test depends, like that of the Schick test, upon age. (See also Fig. 5.)

Table VI.

	Positive per cent.		Positive per cent.
0–6 months	44·8	5–10 years	33·2
6–12 ,, ...	65·3	10–15 ,, ...	22·8
1–2 years	71·6	15–20 ,, ...	16·8
2–3 ,, ...	64·2	More than 20 years	14·4
3–4 ,, ...	60·5		
4–5 ,, ...	48·2		

The Dick test becomes negative earlier in the city than in the country, and among the poor than among the well-to-do. At the beginning of this century Moser and Gabritschewsky regarded the streptococcus as the microbe of scarlatina, and built up the prophylactic and therapeutic methods which are now in use. But their evidence was not conclusive, and the strepto-

Fig. 5.



Percentage result of positive Dick tests at yearly age-periods from 0–20.

coccal ætiology was generally rejected, until Dochez and the Dicks established it, and refuted all objections. There were two arguments against the streptococcus: (1) the impossibility of differentiating the scarlatinal streptococcus from other streptococci; (2) the almost complete immunity after scarlatina, in contrast with the lack of immunity following other diseases caused by streptococci.

Dochez, Avery, and Lancefield claim to have differentiated the scarlatinal streptococci by means of agglutination; I have not been able to confirm these results and others have been equally unsuccessful. Some technical difficulties have not yet been elucidated. The Dick method of differentiating the scarlatinal streptococci seems to me to be of great importance. The Dicks could demonstrate a toxin specific for scarlatinal streptococci and absent in all other streptococci. All animals examined have proved insusceptible to this toxin, and only the goat shows an inconstant local inflammation after intradermal injection. Man, however, is very susceptible and shows all the characteristic symptoms after injection. After an intramuscular injection of about 0·5 c.cm. of a culture filtrate of scarlatinal streptococci, a person susceptible to scarlatina shows, after only a few hours, the following signs: vomiting, high fever lasting for 48 hours, and accompanied by a typical scarlet exanthem, scarlet tongue, and eosinophilia. This disease differs from genuine scarlatina only in that it is not contagious, because it is not an infectious but a toxic disease. The scarlatina toxins are demonstrable with the Dick test, which consists of the intradermal injection of 1/1000 c.cm. of a culture filtrate. Its specificity is not yet quite clear. Most streptococci reach to a larger quantity of filtrate (ca. 1/100 c.cm.), but the specificity of the Dick te is based on the following facts:—

1. It is only positive for persons susceptible scarlatina; convalescents from scarlatina and ind viduals who have already had it give, with fe exceptions, a negative result.

2. The scarlatina toxins can be neutralised wi serum of scarlatina convalescents as well as with artificial antitoxic scarlatina serum.

Results contradicting the specificity of the Di test seem to be explicable by the use of filtrat containing also proteins of the bacteria, which gi allergic reactions opposed to the specific Dick te That is to say, they cause positive reactions in ju those who are sensitised because they have recover from scarlatinal infection. In order to eliminate t fallacy due to the presence of proteins it is alwa necessary to control the test by a toxin soluti previously heated to 100° C. for one hour. In r experience even this control is not sufficient, probab because there are also thermolabile proteins in t filtrates. Another argument raised against t specificity of the Dick test is that sometimes strep cocci cultured from other diseases form a speci scarlatina toxin. I have never met with such strain, and according to the recent investigations Jacobson and Szirmay they are rare. I cannot rega their existence as an objection to the specificity scarlatinal streptococci, which differ from others on by the formation of a specific toxin, but possess t pyogenic properties of all streptococci. It is theref easy to understand how a scarlatinal streptococ may produce a suppuration or a puerperal sepsis an individual immune to scarlatina. There are ot equally convincing facts in favour of the ætiologi rôle of streptococci. The two Dicks, as well Nicolle, Conseille and Durand, were able to obta typical scarlatina in susceptible persons by paint the throat with a small quantity of scarlatinal strep cocci. Finally, Dochez and the two Dicks succeed by immunising a horse with the toxins of scarlati streptococci, in obtaining an antitoxic serum excellent therapeutic effect in scarlet fever. I ha used this serum in 300 cases, and in uncomplica scarlatina its efficacy is quite marvellous. A furt proof of the specificity of this serum is that it exhib the so-called Schultz-Charlton blanching phenomen; in other words, it is capable of setting free the toxs of scarlatina in vivo, bound until then to the cells the blood capillaries. In my opinion the ætiolog rôle of the *Streptococcus hæmolyticus scarlatinæ* better established than that of any other pathoge agent. In Germany it is still regarded as very doubt and it has been pointed out that a filtrable virus mi also play a part. I consider this supposition entir hypothetical and superfluous. We have filtered water which had been used for gargling by pers suffering from acute scarlet fever; we painted throat of susceptible persons with the filtrate and fo that even convalescents from angina caused by hæ lytic streptococci remained free from scarlat symptoms.

The Contagiousness of Scarlet Fever.

In collaboration with my assistant Dr. Deiche undertook the task of analysing bacteriologically path of scarlatina contagion. The streptococci w identified by the Dick test. We found that the s scales previously purified did not contain any strep cocci; we may therefore conclude that they do eliminate the scarlatinal microbe. We did not any streptococci in the urine. The principal focu the tonsil where we, like Dochez, found them in cases. Besides that they were only found in the p The transmission occurs principally by dro infection, and infection through objects in com use must be considered. In the beds, on the w and in the air of rooms occupied by scarlatina pati we found numerous streptococci.

The occurrence of streptococci can be used recognise scarlatina patients and healthy micr carriers. The practical application of such an inv gation, however, involves many difficulties.

ferentiation of streptococci by agglutination seems be uncertain, and the toxin proof is much too nplicated to be applied as a routine. I am inclined deny that the occurrence of hæmolytic streptococci the throat has in itself diagnostic value. Although streptococcus hæmolyticus does not normally ong to the bacterial flora of the human throat, we et with it in other diseases which we must exclude diagnosing scarlatina—e.g., common angina. The currence of hæmolytic streptococci is therefore of diagnostic value in acute scarlet fever; on the er hand, the absence of hæmolytic streptococci in throat makes scarlatina improbable. This may of practical value. If a patient has just recovered m scarlet fever we cannot be quite sure that the molytic streptococci in his throat are scarlatinal, we can conclude that a convalescent in whose oat we do not find any streptococci is completely e of scarlatinal microbes. Although there is no solute safety, there is at least the same probability in the bacteriological control of diphtheria. We ve no information as to the period of contagiousness scarlatina convalescents. It is customary in rmany to restrict the isolation to six weeks, until desquamation ceases. We do not know ether many convalescents are free of microbes ore this, but we know for certain that even after weeks' isolation transmission has occurred in the ily. We have found hæmolytic streptococci in throats of 100 per cent. of convalescents on the y of their leaving the hospital after six weeks. is easily explains the frequency of return cases. concluded that the patients failed to lose the robes because they were constantly being nfected. We therefore organised an intermediate entilation" block (Lüftungsstation), to which the ients who had but few microbes in their throats re transferred. No recent scarlatina cases were mitted to this block. The consequence was that majority of patients could be dismissed after a weeks' stay, free from streptococci. Many of them t the streptococci after three to five weeks. On one asion, however, a patient suffering from a wound rlatina was admitted to the hospital; she had as ual in such cases no hæmolytic streptococci in the oat. She was therefore transferred to the inter diate block, and remained for three weeks free from eptococci. After that time recent cases of scarla a were admitted to this block because the scarlatina rds were overcrowded. Two days afterwards we nd hæmolytic streptococci in the throat of this ient.

Ve have made a practice of dismissing patients n the intermediate block irrespective of the period illness and the existence of desquamation if the oat has proved free of hæmolytic streptococci at lee examinations. Many patients could be dis sed after three to five weeks. Among 39 patients missed without bacteriological examination there e four return cases. Among 50 patients dismissed er examination no return cases occurred. A teriological control is therefore a far greater rantee against return cases than routine dismissal er six weeks and after disappearance of the scales. teriological control will also save the patient from ecessary restrictions and reduce public expenditure. 40 private patients more than half had no strepto ci after a period of two to three weeks.

Before the American investigations were known in many Degkwitz had used scarlatina convalescents' um in the prophylaxis of 1000 cases with excellent ults. I have obtained the same good results, and e never seen a failure among hospital cases treated h serum taken six weeks after the outbreak of the ase. Its efficacy is due in the first place to the itoxin content, and sera of poor efficacy can be luded by the Schultz-Charlton phenomenon. We ved by this method that the serum of many adults tains almost the same quantity of antitoxin as valescents' serum. This fact is of eminent ctical importance when sufficient convalescent um is unobtainable. Convalescents' serum has a considerable bacteriological power against scarlatinal streptococci, a power which is lacking in artificial immune serum. This may have a share in its prophylactic effect. We use 5 c.cm. of convalescents' serum for children and 10 c.cm. for adults. The protection may last about four weeks. If no convalescents' serum is at our disposal we use artificial immune serum, but its prophylactic efficiency seems less reliable and disappears two weeks after injection. In order to avoid unnecessary serum injections, the individuals needing protection may be selected by the Dick test. This previous testing is useful in children's homes where enormous quantities of serum would otherwise be needed. In a children's home in Berlin in which cases of scarlet fever had occurred 126 inmates were tested by Dr. Deicher; 43 had a positive reaction, 83 a negative one. Of the 43 positive children 7 took scarlet fever, of the 83 negative children only 2 fell ill with scarlet fever, and 3 with angina. Thus a higher percentage of the positive children caught scarlet fever (18 per cent.: 2·4 per cent.). An absolute protection is therefore not guaranteed by the negative Dick test. Bacteriological control and serum prophylaxis place at our disposal preventive measures which are very effective in single cases but, as in diphtheria, these methods are only of limited value in public health campaigns against scarlatina, on account of the enormous number of healthy microbe carriers. Only active immunisation would ensure complete success. In 1912 Gabrischewsky in Russia immunised by means of vaccines of scarlatinal streptococci. The results seem to have been very good, and it is surprising that these methods fell into oblivion. Since the discovery of the scarlatina toxin immunisation by its means has been resumed on a large scale in America, Hungary, and Poland. There is at present no agreement with regard to the dosage. The skin test dose is generally accepted as the toxin unit, but the amount used for immunisation differs widely. The total number of children inoculated with scarlatina toxin all over the world may already amount to 100,000. The results agree in showing that the experimenters have succeeded in changing a formerly positive Dick test into a negative one in 50–80 per cent. of the cases. It will need a longer period of observation to determine whether a protection against natural infection is also attained by this immunisation.

THE TREATMENT OF RHEUMATIC CARDITIS.*

By GEOFFREY BOURNE, M.D. Lond.,

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The treatment of rheumatic heart disease is doubly discouraging; long-continued efforts so frequently appear to have been wasted, and the patients themselves are often the brightest and most cheerful of those in a children's ward. There is a very real danger, therefore, of feeling that whatever is done the outcome is likely to be the same, and of allowing one's efforts to relax. Only by holding to first principles and by refusing to be disconcerted by the long list of failures are the best results likely to be obtained.

In the treatment of active infective disease there are two objects: the removal of the causative agent and the amelioration of symptoms. Seeing that the cause of acute rheumatism is as yet unknown, although streptococci are suspect as accessory, if not as primary agents, attention is of necessity directed to the second of these aims. The primary object of treatment will be made most clear by considering two main factors which interact throughout the duration of the disease. They are (1) the continuous

* A post-graduate lecture given at the East London Hospital for Children, Shadwell.

nature of the infection, and (2) the situation of the lesion. Infection in acute rheumatism is a continuous process. Occasionally the disease seems to run a clear and well-defined course, but more often it is insidious in its onset and treacherous in its simulation of quiescence. During this period of activity, which may last for many months, the virus is continually at hand and ready to take advantage of the slightest opportunity. Evidence of this is found in the continued fever, the leucocytosis, and the periodic outcropping of nodules. The other factor is the situation of the lesion. The valvular lesions occur almost invariably along the line of apposition of the cusps. The pericardial lesion, by its very definition, is found where the visceral and parietal layers rub. The articular lesions are similarly situated at points open always to mild trauma. The nodules occur where the elbows, ankles, and knees are most exposed to knocks or pressure, and where the occiput and spine meet the pillow and mattress. Nor is it unreasonable to imagine by analogy that the lesions present in the substance of the myocardium are similarly affected by stress and pressure, though in this case the exact physical determinants are less easily analysed. The myocardial disease is, of course, the ultimate factor in prognosis, but that of the valves is more easily visualised, and is more readily used as an example.

Continued mild trauma and continued infection thus seem likely exciting causes of those permanent lesions, the cumulative effect of which gives acute rheumatism its chief fatality. From this it follows that, if the infection cannot be suppressed, attention should be continually directed to reducing trauma. Rest during the period of active disease is imperative. A reduction in the pulse-rate of 10 beats per minute means that the inflamed cusps are snapped together 14,400 times less in the 24 hours, and a reduction in the pulse-rate from 130 to 80 saves them from 72,000 collisions in the same period. The cumulative saving of 10 beats per minute for three months cannot be over-estimated. Expressed in percentages, a saving of 10 beats per minute, the rate falling from 90 to 80, means a reduction in the total number of beats occurring in 24 hours by nearly 9 per cent., and a saving of 50 beats per minute, the rate falling from 130 to 80, means a reduction in the 24-hourly number by 26 per cent. These figures also apply to the saving in the stress and pressure which probably involve the equally important myocardial lesions during systole.

The diminution in rate has other interdependent results: diastole is prolonged, the total time spent in systole is shortened, and the cardiac work is reduced to a minimum. During diastole the heart muscle-fibres receive their nutritive coronary blood-supply and eliminate waste products; thus a shortened diastole, or a faster rate, encroaches upon the time available for this. If we apply these principles to treatment the canon that emerges is that *the heart-rate must be kept as low as possible during activity.*

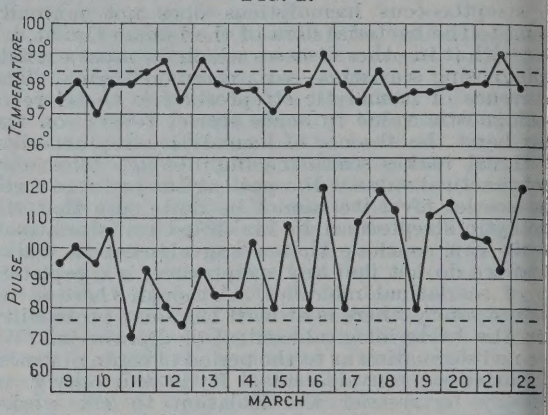
The Assessment of Activity.

The activity of rheumatic carditis is assessed by attention to the following points: Presence of nodules; presence of fever; presence and type of tachycardia; cardiac dilatation; presence of a leucocytosis; variation in the hæmoglobin percentage; appearance of the patient; and electrocardiograph tracing.

Nodules.—The appearance of rheumatic nodules is to be taken as indicating that active rheumatic carditis is present, their presence that an active rheumatic carditis is either present or very recent. Their significance is not altered in the absence of fever. Nodules are more easily seen than felt, especially when small. The elbow, for example, should be held flexed in a good oblique light and the skin made to slide over the deeper tissues; the nodules are often seen to move slightly under the sliding skin. In doubtful cases the two sides should be compared.

Disappearance of nodules does not necessari mean that the disease has become quiescent, thou it usually suggests an abatement. (See Fig. 1.)

FIG. 1.



The chart of a child suffering from active rheumatic cardi Both temperature and pulse curves prove the presence activity. The irregular variation in the former, althoug higher reading than 99° is not reached, is significant.

Fever.—The temperature chart in active rheuma carditis has two characteristics; pyrexia is usua present in spite of adequate salicylate administrati and the temperature curve shows unusual changes level. Fever is significant, even when the readi reach such unsensational figures as 98·8° or 9 The changes in level are most readily appreciat from the chart, and frequently occur in an apyrex patient. Absence of fever does not necessar indicate that the disease is quiescent. Nodules m appear in an apyrexial patient. The phrases "h fever" and "constipation fever" are sops conscience.

Tachycardia.—The spikiness of the pulse ch during activity is even more striking than is irregularity of the temperature curve. To appreci it, it is necessary to chart the pulse-rate proper The practice of writing a double line of figures the bottom of a chart is merely a means of hid valuable evidence. In most cases of active card the pulse-rate varies very greatly within a few da producing a curve like a silhouette of some mount range. With quiescence the undulations beco milder and ultimately vanish.

Cardiac Dilatation.—The relative position of apex beat from time to time, as measured in inc from the mid-line, is of considerable value in estimat activity. A dilating heart in acute rheumatism inevitably a poisoned heart, and one diminishing size is as frequently one whose freedom from toxæ allows tone to be re-acquired. Should the posit of the apex beat remain unchanged, no conclus one way or the other can be drawn. Two sour of fallacy must be borne in mind. An adherent p cardium may fix the apex beat, and a full meal m in a child, displace it to the left by as much as l an inch. All measurements are, of course, ta with the patient lying flat on the back.

Leucocytosis is an almost constant finding in act acute rheumatism.[1] It is seldom very high, figu near 12,000 being usual, except with the onset of acute pericarditis, when considerably higher val occur. The persistence of even a mild leucocyt is strong evidence that the disease is still active; absence is unusual, but does not necessarily indic that infection has ceased. The persistence o leucocytosis in the absence of any other sign symptom of activity suggests recrudescence.

Hæmoglobin Percentage.—Nearly all cases of act rheumatism have some degree of chlorotic anæm Weekly estimation of the hæmoglobin percentage

[1] Swift, H. F., Miller, C. P., and Boots, R. H.: Jour. Investig., 1924–25, i., 197.

luable, accurate, and easy means of obtaining idence upon the progress of the case.

Appearance of Patient.—There is no doubt that the ial expression and appearance of a patient in whom e disease has become inactive is often characteristic. ere is an absence of puffiness and of the fevered, ghtly emotional expressions that flit across the e of the rheumatic child. The appearance suggests lm, relaxation, and comfort.

Electrocardiograph Tracing.—A mild degree of art-block is not uncommon in the active stages of ute rheumatism. It is manifested by a prolongation the P–R interval to 0·2 seconds or more. If esent and frequently measurable, it will be an ditional check upon the prognosis of a still active ion. Its absence is of no help in assessing the esence or degree of activity.

Relation of Signs of Activity to Treatment.

If one or more of the above signs of activity be esent in a patient recently diagnosed as suffering m active rheumatic carditis, they should be refully followed until one and all have disappeared. rsistence of any of them indicates that the patient ould be confined to bed. The time of final dis- pearance of the last sign should be noted, and ally the patient should lie flat in bed, with one thin low, for at least another two months. At the end this period further steps may be taken at intervals a week. These are, in order, an allowance of extra lows, sitting up for half an hour, for an hour, and by gradations of half an hour up to three hours. uring this time massage of the legs should be stituted. Finally the patient is allowed to walk. rst a few steps to a chair only are taken, and by grees more and more exercise is allowed. If ilities exist and the climate permits, these stages of atment can with advantage be undergone in the en air.

Steady progress in convalescence is only possible in tients who show none of the signs of activity. ould any one sign reappear, the patient should back to bed and recommence the unabridged ogramme.

Prevention of Tachycardia.

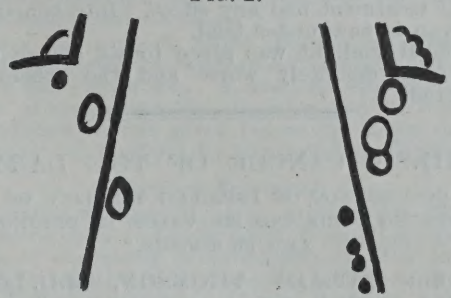
Rest in bed, with one flat pillow, is the only way of leping the pulse frequency at its lowest figure. The own causes of physiological tachycardia (exercise d emotion) must, of course, be avoided. There is drug upon which reliance can be placed to produce bradycardia. Digitalis [2] will occasionally do this, en with a normal cardiac mechanism, but the effect infrequent and sometimes transitory.

The Tonsils.

One of the known facts in the pathology of acute eumatic carditis is the close relation it bears to nsillar disease. This is so generally accepted that ere is no need for further elaboration here. The lue of tonsillectomy as a preventive is, however, ll under dispute. The practice at the East London spital for Children is to remove the tonsil when ere is evidence of tonsillar disease, provided the eumatism is sufficiently inactive. The measure is t devoid of danger, and great care is necessary in imating the risk of lighting up a fresh spell of ection. The guiding principle is the degree of tive carditis, as deduced by the criteria already scribed. Considerable experience is necessary and ch case must be judged individually. The points be considered in determining whether or not nsillar disease is present are (1) the history of sore roats, (2) an associated lymphadenitis, (3) the pearance of the tonsils.

A history of sore throats is significant when they ve been frequent, or where a rheumatic attack finitely began with them. Any enlargement of mphatic glands in the neck is to be carefully watched , and it is wise to examine the neck from behind. ree areas are specifically palpated: just beneath the angle of the jaw, between this and the anterior border of the sternomastoid in the upper third of the neck, and behind the posterior border of the muscle in the lower half of the neck. Any abnormalities are charted, and their variation watched from day to day. In this way it is often possible to decide whether there is an active tonsillar lesion or not. Infections of the scalp, teeth, and middle ear must, of course, be excluded. Changes in the size of the lymphatic glands are charted in the manner shown in the diagram. The two short-angled lines indicate the angles of the jaws, the two oblique lines indicate the sternomastoids. The line enclosed in the jaw angle represents the tonsil, and the lymphatic glands are also shown. Sizes and consistency can be indicated, a black spot marking a hard and a circle a soft gland. An individual soon invents his own formulæ for size and hardness. The exact condition can then be charted in a few seconds with a minimum number of strokes. (Fig. 2.) The size and appearance of the tonsils are valuable criteria if abnormalities are

FIG. 2.



Left Side.—The left tonsil is smooth and slightly enlarged. Below the angle of the left jaw is a small hard gland, lower and between it and the sterno-mastoid is a larger soft gland; lower still and posterior to the muscle is another similar gland.

Right Side.—The tonsil is large and its surface is irregular. Beneath the angle of the jaw is a large soft gland, and between it and the sterno-mastoid two similar glands adherent to one another; lower and posterior to the muscle is a string of hard, shotty glands.

present, but disease may exist even though the tonsils are not enlarged and look superficially healthy. Points indicating disease are enlargement, redness, raggedness of surface, and pus in the crypts. Tonsils should be considered diseased if the history is characteristic or if there is evidence of glandular enlargement.

The outstanding danger of tonsillectomy in a rheumatic child is the possibility of lighting up a dormant acute rheumatism. If a state of sufficient quiescence has not been reached, the operation may be followed immediately by fever, tachycardia, cardiac dilatation, and the appearance of a fresh crop of nodules. I have seen three cases of acute rheumatic pericarditis arising in this way; the harm done far outweighs any theoretical benefit. If, however, a state of sufficient quiescence has been attained, and if adequate salicylate dosage is given before and after tonsillectomy, such troubles can be avoided. The dose should be grs. 15–20, with double the quantity of sodium bicarbonate, two-hourly by day, and four-hourly by night if the patient is not asleep. A potassium permanganate gargle is freely used.

Other Measures.

Sodium salicylate is the only drug known to have an effect upon acute articular rheumatism. Evidence has been adduced to prove both that it has and that it has not an effect in the cardiac type of the disease. In my experience it certainly does no harm. It seems to lessen to some extent the number of recrudescences in children attending as out-patients, and on the whole it is valuable in the treatment of the active cardiac infection. The doses given to in-patients are grs. 10–20 two-hourly, with twice the amount of sodium bicarbonate.

Gargles are invariably given, and most children quickly learn the art of using them. Potassium

[2] Sutherland, G. A.: Quart. Jour. Med., 1918, xii., 183.

permanganate is probably the best; it is easy to carry in the form of crystals, and these are dissolved by the patient or the mother in warm water until a light red colour is obtained.

These two forms of treatment have proved their value. Others which have here been given an extended clinical trial in acute and subacute cases during the last eight years are: vaccines, protein shock, the intravenous disinfectants (flavine, gentian-violet, and neokharsivan), and artificial sunlight.

A series of patients were treated with sensitised and desensitised vaccines, with the collaboration of Dr. Mervyn Gordon on behalf of the Medical Research Council. The vaccines were prepared from streptococci derived from post-mortem material of cases of the disease. No encouraging results were obtained.

Protein shock was only tried in four cases, doses of 25–100 million typhoid bacilli being given intravenously. Since each case showed more signs of activity afterwards, no further investigations were made.

Intravenous flavine was given to 12 chosen patients and intravenous gentian-violet to another 12; neither form of treatment had any effect. Intravenous neokharsivan is now under trial.

Artificial sunlight was given to six chosen cases; three were definitely worse and the others were unaffected.

INTRINSIC CANCER OF THE LARYNX.

THE OCCURRENCE OF IMPAIRED MOBILITY OF THE AFFECTED CORD AND ITS VALUE IN DIAGNOSIS AND PROGNOSIS.*

BY SIR STCLAIR THOMSON, M.D. LOND.,
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IT is a truism that stereotyped errors or exaggerations in medicine are difficult of eradication. This is my excuse for returning to the subject of impaired mobility in intrinsic cancer of the larynx.[1] The present observations are based on 70 cases operated on through a laryngo-fissure.

Historical Survey.

The occurrence of this valuable symptom appears to have been first noted by Lublinski [2] and Semon [3] about the same date. In 1886 Semon unfortunately committed himself to the statement that a malignant tumour causes "a considerable impairment of the affected cord at a very early period, and is one of the most valuable and constant points of differential diagnosis." Twenty-one years later, as the result of further experience, Semon saw the need of modifying this opinion considerably [4] but, unfortunately, it had then become embedded in the text-books, and it was difficult to diminish the exaggeration which the weight of his authority had established. His earlier and somewhat misleading opinion is still widely held, so that cases are often dismissed as "quite innocent," or are not referred to an expert in time to secure a lasting cure with a useful voice (by the laryngo-fissure route of operation), simply because "the cord moves quite freely."

I propose to show that interference with the movement of a vocal cord affected with cancer is an occasional symptom, and one of much value, but that it is not an early nor a frequent one.

Author's Material.

My conclusions are based on cases (*a*) operated on by laryngo-fissure, (*b*) with the diagnosis verified in every instance by the microscope, and in which (*c*) the after-history of each case has been followed to the present date, or until the patient's death. Th cover a period of 28 years. Cases which were o seen in consultation, or not operated on, or operat on by other routes, have been left out of conside tion. I have had 70 such cases. Mere mechani interference with the excursions of the affected co due to the projection of the growth, was noted wh it was present, but is not here included as an instar of impaired, intrinsic mobility.

In these 70 cases the affected cord was qu mobile in 39. In 21 cases the mobility was more less impaired, being described as "flagging," "sh gish," "limited in movement in anterior (the usua affected) half," or "hardly any movement." 10 cases there was no movement at all in the affect cord, and it was described as "quite fixed." Th in 39 cases, more than half the total, this symptom impaired mobility was entirely absent.

In five cases paresis developed while under obser tion. In some it was noticed a month after the fi inspection; in others at varying intervals, even to nine months. (This last case was successfu operated on and survived ten years to die of tuberc Where the diagnosis is doubtful, particularly wh a biopsy is decided against and a case is being ke under observation, it should be carefully scrutinis once a month to detect any onset of this symptom

Deductions.

Any defect of movement in a vocal cord, due cancer, is caused by the neoplasm penetrating i the subadjacent intrinsic muscles. The more growth projects above the surface, the less lik is this to happen. It is in such cases that a biop is often both practicable and, diagnostically, sa factory. When the neoplasm is imbedded in a c it tends to penetrate deeply and it is more diffic to obtain a satisfactory portion for section. It in such cases that the occurrence of impaired mobil is a valuable symptom.

As regards Prognosis.—The occurrence of pare in a cord, due to an infiltrating carcinoma, is unfavourable prognosis. In my 39 laryngo-fissu on a mobile cord, two must be left out of accou as they were only operated on this year. In remaining 37 cases no less than 31 were free fr disease at the end of three years (=84 per cent.). the cases with impaired movement 15 out of 20 pas the three-year limit without recurrence (75 per cen In 10 cases, in which the cord was quite fixed, died from other causes within 18 months. Of remaining 9 cases, with complete fixation of the co only 4 were free from recurrence three years aft wards (=44 per cent.). Of these cases, 3 died fr other causes five, seven, and ten years later. On still alive and well 11 years afterwards.

As regards Treatment.—Free mobility of a vo cord affected with carcinoma would indicate suitability of operation by the laryngo-fissure rou particularly if the disease has not extended either extremity of the cord and the subglottic a is free. Under the same conditions, a simple pare or impairment of movement does not contra-indic the same operation. The removal should be as w as is possible and the larynx should be carefu and regularly scrutinised once a month dur the subsequent year, as any recurrence can successfully dealt with by a partial or compl laryngectomy.

When the cord is quite fixed, and the disease d not invade either extremity, the same plan of tre ment can be successful. Even when, under the sa condition, the subglottic space is invaded, a last cure may, with the same method, be secured. But with a fixed cord, the disease has extended to base of the arytenoid posteriorly, or crossed t anterior commissure, or extended to the ventricu band, or to the epiglottis, or (downwards) as far the cricothyroid membrane—some more extens operation is required.

* Read before the International Congress of Oto-Laryngology. Copenhagen, July 30th–August 1st, 1928.

[1] StClair Thomson: Intrinsic Cancer of the Larynx; Impaired Mobility of the Affected Cord, THE LANCET, 1920, ii., 183.

[2] W. Lublinski: Berlin Klin. Woch., Feb. 22nd, 1886, p. 122.

[3] Heath's Dictionary of Practical Surgery, London, 1886, i., 895.

[4] Trans. Medical Society, London, 1907, xxx., 113.

Summary.

Impaired mobility of a vocal cord is not a ssary nor an early symptom of intrinsic cancer ne larynx.

It is met with in less than half (about 44 per .) of the cases presenting themselves as suitable operation by laryngo-fissure.

It is more apt to develop in an embedded or rating neoplasm than in a distinctly sessible rojecting growth.

When present it is a valuable symptom in helping istinguish a malignant from an innocent neoplasm. s of little value, and may even be misleading, in nosing a malignant growth from a tuberculous yphilitic deposit.

Its absence is of good augury and hence the rability of making an early diagnosis before it developed. As regards prognosis, its presence a unfavourable symptom.

Its absence or presence is a valuable factor—in unction with other data—in determining the t suitable treatment.

HE ENLARGED PROSTATE AND ITS NON-OPERATIVE TREATMENT.*

BY F. HOWARD HUMPHRIS, M.D. BRUX., F.R.C.P. EDIN., D.M.R.E. CAMB.

ew diseases from which men of middle or advanced suffer have so tried the skill of the physician and endurance of the patient alike as enlargement of prostate gland. It has been estimated that one very three men over 60 complains of symptoms ed by an enlarged prostate, and to these sufferers t be added others in whom the enlargement ves rise to no appreciable symptoms." An enlarged tate causes local troubles connected with urina-, and also, owing to its reciprocal relation with the bro-spinal centres, to neurasthenic symptoms. ed, Dr. Snow stated that the prostate should lly be examined in men suffering from neuras-ia. Mental sluggishness often accompanies rgement, and sometimes the only symptom of a nic prostatitis may be inactivity of the mind. symptoms for which the patient seeks medical ce arise from the mechanical obstacle to the ary flow. He often has to strain before the flow be established, and when the act is apparently hed some more urine dribbles away, often a few ites after the patient thought his bladder was ty. The time occupied in passing water gradually mes longer. Nocturnal urination and frequency icturition are common. When a patient has these ptoms, apart from his discomfort, he is not free danger. The bladder has lost some of its tone it is usually distended, so that attacks of cystitis not uncommon. The patient is liable to attacks omplete retention of urine or to septic poisoning. he great majority of cases he is instructed in the f passing a catheter, and his catheter life begins; ould be a bold man who characterises this as er free from risk or a pleasant prospect.

Drug and Gland Treatment.

rugs are of little use except to relieve the symptoms ritation, to improve the condition of the urine, o combat complications, such as hæmorrhage. s have been reported of an enlarged prostate, one ordinary senile enlargement and another a matic inflammation in a young adult, in which administration of ergot (liq. ext. ergotæ, 3j.) -hourly, and later, night and morning, apparently ced the size of the prostate. Organotherapy in country has not been used to the extent which retically it deserves; in France it has been st a routine treatment for nearly ten years. The argument for the use of prostate extract was based on a theory which may be roughly outlined as follows:—

The fact that prostatic hypertrophy quite commonly follows the functional retirement of the testes has caused many observers to believe that there is some relationship between the endocrine activities of both these glands. It is believed that when the testes become functionally inactive the prostate becomes enlarged in a compensatory fashion, just as other ductless glands enlarge when closely related glands are put out of commission. It is generally accepted that, when deep-seated infective processes and essential new growths of the prostate gland can be excluded, there remains a form of enlargement of the prostate gland which is closely related to waning gonad function. This should theoretically respond to treatment by organotherapy, which would supplement the endocrine function of the testes and thereby lessen the probable necessity for over-activity on the part of the prostate. The extract is administered in capsules, grs. 1½ of the dried extract, and in ampoules containing the equivalent of this dose in a physiological salt solution.

Surgery has without doubt saved many lives and relieved this condition, with operations such as prostatectomy and castration. A masterly epitome of the relation of surgery to this disorder may be found in the Bradshaw lecture given before the Royal College of Surgeons of England by Sir Cuthbert Wallace.[1]

Electrical Treatment.

Electricity will usually give rapid relief (Roger), and in some cases complete relief, from all symptoms. The use of electricity is comparatively little known, since it is mentioned but rarely, and then only in terms of disparagement, a typical sentence reading: "So far it must be conceded that electricity, radiotherapy . . . yield very incomplete, fugitive results."—(Dr. G. Marion, Paris.) I have had experience of electro-therapeutic measures in the treatment of enlarged prostate for over 25 years, and have found, and am finding, them daily of the greatest service.

The three forms of treatment which I am about to describe are: (1) the static wave current; (2) X rays; and (3) diathermy.

Histologically, the enlargement is a proliferation of the constituent elements of the prostate, but in all forms of prostatitis the consistence is less firm and the texture somewhat more open and spongy. There is more fluid than natural in the gland tissue; the mucous membrane may be thinner and more vascular and the duct orifices larger. This mechanical obstruction requires a mechanical means to remove it, and nothing can compare with the static wave current, which was accidentally discovered by Dr. W. Benham Snow some 30 years ago when he was treating an intrapelvic neuritis. The patient had a large, tender prostate, which was found to be softened and reduced in size after the application of the electricity, and Dr. Snow says that no work he has done since has given him greater satisfaction. In 1902 Dr. Snow gave me the benefit of his experience, and since then I have used his method continuously, and can recommend it with confidence. The very nature of the disease makes it peculiarly suitable to the action of the static wave current. We have a structure which is partly glandular and partly muscular. We can place an electrode alongside the diseased structure and apply the current almost directly to the pathological gland. Muscular contractions are induced, the gland tissue is contracted, and the products of inflammation are squeezed out. These accumulations having been mechanically expelled, a tonic circulation is restored to the gland by the electrically stimulated cell activity. Each successive treatment gives more and more power to the muscle-fibres and more tone to the glandular structure, leaving the gland smaller and of more normal consistence until there is little left but healthy muscle-fibre and healthy gland

*Paper read at the Second International Congress of Radio- at Stockholm, July 30th–August 1st, 1928.

[1] Brit. Med. Jour., Nov. 19th, 1927.

tissue, except in those very long-standing cases where the hyperplastic fibrous tissue still persists.

The treatment discovered by Snow remains practically the same to-day. The details are as follows:—

A metal electrode is passed into the rectum and pressed against the gland. It is attached to the positive side of the machine, the negative being grounded. The sliding rods, touching each other at first, are gently and slowly opened according to the toleration of the patient. The treatment continues for 20 minutes. The effect on the prostate tissue is strictly mechanical, and there is no electrolytic or thermic action. When the current is applied with a metal electrode in the rectum over the prostate gland it causes alternate recurrent contraction and relaxation of the tissues. The current is regulated in the rate of discharge at the spark gap by controlling the speed of the machine, so that the periods of contraction alternate with the periods of rest at the rate of 120 or so to a minute. The sinusoidal current from the morse wave generator—the wave water interrupter of Turrell and the de Wattville current, or the Smart-Bristow coil with hand interruptions—may be used when a static machine is not available, but no current can replace the static.

It occurred to me that sparking the prostate should have an especially good effect in obstinate cases, and therefore I had made an ordinary metal prostatic electrode on a vulcanite handle. Thus, on the principle of Snow's spark director, a spark applied to the knob would have the effect of a spark applied to the gland. In all sparking the spark gap should be wide open, the negative side of the machine connected to the platform by means of the shepherd's crook, and the positive side and the ball attached to separate groundings. I cannot say, however, that this gives any better results than the ordinary static wave current.

Patients often remark, even at the end of the first treatment, that the perineal sense of weight is less, and after daily treatment for a week or ten days and tri-weekly séances thereafter for a month or six weeks, the congestion and engorgement have disappeared, and with them the pain, discomfort, and necessity for getting up at night. The condition of the bladder has also improved, and I am inclined to attribute this, in part at least, to the stimulation of those unstriped muscle-fibres which continue to the bladder. These fibres have to be stimulated to contract, and with this exercise would naturally acquire more power and tone, not only in their prostatic portion but in their vesical part as well, and would thus give more muscular force to the bladder and greater power to get rid of urine.

Often after one treatment the gland is reduced in size, loses its tenderness, and is softened throughout its entire structure. The treatment should be given often enough to prevent a relapse—probably daily. As the gland grows smaller and softer the subjective symptoms grow less and less until they disappear entirely.

In the very aged, or where there is much fibroid tissue, we can only hope for an abatement of the inflammatory process, but even here we get a marked improvement in the tonicity of the unstriped muscle-fibre, both prostatic and vesical. In other cases, even where the condition has lasted for a number of years with cystitis and difficult micturition, we get an improvement so marked with the forcing out of the infiltrating exudates that in the patient's estimation it amounts to a cure.

Until seven or eight years ago, for cases where infection complicated the enlarged prostate, I used glass vacuum electrodes energised by the static machine and connected to the negative side of the machine, the positive being grounded. My theory was that a germ-destroying effect was produced.

Iodine and thiosonamin have been administered by ionisation, but the results have been disappointing. Both these methods were introduced by Neiswanger, who lays down the following rules:—

A large sized prostatic gum-elastic catheter is used in which is a galvanised iron wire stylet; round this is loosely wrapped some cotton-wool soaked in a solution of thiosonamin. The end of the catheter is provided with numerous perforations. The instrument is attached to positive pole, with the negative pole connected to a la abdominal pad. About 10 milliampères are allowed flow for ten minutes every fourth day.

I have little practical experience of this meth and have found it inferior to other forms of treatme

A Typical Case.

A man of 65 consulted me on Sept. 22nd, 1911. Ab six or seven years previously he had noticed frequency micturition, especially at night. This had apparently a little better, but lately it had troubled him acutely. got up at least five times a night to pass water; he co retain urine for four hours at a time during the day, bu was more comfortable to pass it every two hours or so. also complained bitterly of a second involuntary flow s minutes after finishing micturition, of discomfort before after micturition, and of a dragging sensation during day. He also had a pain in the back, which he ca lumbago. Physical examination showed that an enlar and fairly hard mass, the size of a hen's egg, occupied whole of the prostate. There was nothing in his hist or general health to call for comment, except that he never had any venereal disease.

Treatment was instituted at once with the static w current on the prostate, and after 20 applications discontinued on Nov. 9th, the prostate being about half size that it had been on Sept. 22nd. The records for t days were as follows:

Date, 1911.	Retired to bed.	Disturbed for micturition.	Date, 1911.	Retired to bed.	Disturbed micturitio
Sept.	P.M.	A.M.	Oct.	P.M.	A.M.
22	11	No change.	19	11.45	4.30, 6.30
23	11	,,	20	10.45	1.45, 6
24	11*	,,	21	11	2.30, 6.30
25	11	4.30	22	11	2.30, 6
26	10.30	4	23	11	3.15, 6.45
27	11	12.30, 4, 5.30	24	10.45	3.15, 5
30	10.30	5	25	10.45	5.30
Oct.			26	11.15	3.30, 6.30
1	—	1.30, 3, 4.45, 6	27	11.15	1, 5.30
3	—	3.15, 5	28	11.15	4.45
4	—	5.45	29	11	3.30
5	—	1.30, 3, 4, 5, 6	30	11	2.30, 4.30
7	—	1.45, 6.15	31	11.15	3.30
8	—	4.45	Nov.		
9	—	2.5	1	11.15	3.45
10	—	4.30, 6.30	2	11.15	6.15
11	11.45	3.15, 5.30	3	11.15	6.30
12	11	5.30	4	11.30	7
13	11	4	5	11	5
14	11	3, 6	6	10.45	2, 6
15	11	12.15, 1.45	7	12	6.30
16	11	3.15, 6.15	8	11.15	4.30
17	12	4.15, 4.45	9	11	4
18	10.45	5.30			

* Discomfort after micturition less. "Lumbago" pain g Frequency of micturition the same.

The patient arose each morning at 7.30 and pas water. From the end of October he was distur but once nightly.

X Ray Treatment.

Much benefit has been obtained by the use X rays, but cases must be carefully selected. simple adenomas are extremely sensitive, but presence of fibrous tissue reduces the sensitivity that adenofibromas and fibromyomas react in inv proportion to the amount of fibrous tissue pres When the prostate is large and soft, good results be expected, but X rays are of little value in treatment of hard, bossed glands elevating the f of the bladder. Suitable cases respond rapidly; nocturnal frequency is diminished after only a irradiations, and a reduction in the size of the gl can soon be appreciated. Cystitis is a con indication to X ray treatment, as a severe exace tion is likely to follow the application of the rays.

Technique.

I use only one port of entry—the perineum. The treatm may be given with the patient lying on his side on a co but I have found it more convenient to use a special st like a high office stool, which can be placed over the X tube. In the seat is a circular aperture, 4½ inches in diam through which the rays are directed. When the patien seated on the stool the perineum can be accurately cen and the cheeks of the buttocks easily separated and m

ined in position. The testicles are protected by a layer of ad rubber fixed to the seat.

The best results are obtained with rays of moderate ırdness in divided doses. I use an 8-inch equivalent ark gap with 2–3 mm. aluminium and ½-inch boiler felt filters. Six doses of 1/6 B. are given over a fortnight, and e treatment is repeated at the end of six weeks. Two or ree series are usually sufficient, but I have many patients ıo come twice a year for a single course as a prophylactic ainst recurrence, even though they may not be worried the time by frequency or other symptoms of enlargement.

Diathermy.

So far, only non-infective prostatitis has been ınsidered. In cases of gonococcal prostatitis athermy is the treatment to be adopted. Its value ıs been pointed out by E. P. Cumberbatch, whose perience and writings on the subject have been the highest value. The rationale of the treatment pends upon the power of the diathermic current to stroy the bacilli *in situ*. The temperature which ill kill the micro-organism is one which is harmless even beneficial to the tissues.

For the modern technique we are also indebted to Dr. ımberbatch. He has perfected electrodes containing a ermometer which registers the heat which exists, or has en produced, by the current at the junction of the instruent and the mucous membrane. The electrode is inserted the rectum, so that the prostate gland rests upon the ad of the electrode when the patient is lying on his back. ıe electrode is attached to one terminal of the diathermy achine and the other terminal is connected to the indifferent ctrode, for which I use a metal pad placed on the abdomen. ımberbatch uses a belt of sheet lead 3½ inches wide and feet long. This "is placed around the pelvis and the erlapping ends are passed through a stout wire loop and nt back so that the belt holds firm and even contact with e skin." Whichever indifferent electrode be used, the rrent should be turned on and increased very slowly, sensation of heat but not of pain should be produced; if the tient complains of pain the current should be reduced ıtil he is absolutely comfortable. This will usually be at temperature of 106° F. or slightly higher, though at the st treatment 104° or 105° F. should be the maximum. ıe treatment should be of 20 minutes' duration, and be peated every other day.

With these three forms of treatment, and a sufficient telligence on the part of the patient to obtain edical advice before it is too late, the different types ıd degrees of enlarged prostate will cease from oubling, and the middle-aged man will have his st at night undisturbed.

ALEUKIA HÆMORRHAGICA: MYELOPHTHISIS.

WITH A REPORT OF A CASE.

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Cases showing a hæmorrhagic diathesis are xtremely difficult to place in their proper groups, ıd although the diagnosis of purpura hæmorrhagica ay be sufficient to label the case, I think attempts ıould be made to separate the groups. Frank [1] ıs described cases which he considers are worthy a separate name and classification as aleukia æmorrhagica, and this case seems to correspond ith those he describes.

The patient was 20 years old, a plasterer.

Family History.—Father and mother alive and well. No story of any blood trouble. Two brothers alive—perfectly ealthy, but pale and anæmic-looking. Mother is also ale, and sons "took after her" in appearance. No history any illnesses.

Previous History.—Perfectly healthy. Never lost a day's ork through illness, and was a particularly energetic and fficient worker in his father's employ.

Present Illness.—Eighteen days before consulting his octor he felt a little out of sorts, languid and vaguely red. He noticed a few spots, like small blood vesicles, ader the skin, but continued his work for a fortnight. t the end of this time the spots had faded, but a few more appeared and his urine contained blood. His doctor sent him to bed. There was a small subconjunctival hæmorrhage and some oozing from the fauces. He had a small superficial cut on the left middle finger which had not healed as quickly as usual, but he and his father were positive that the spots preceded this by 10 or 12 days, during which he continued work. When I saw him, in consultation with Dr. G. Ferguson, of Oldham, he was pale and coughing up blood. Blood was oozing from the fauces, which showed much swelling and gangrenous-looking clot. The cut on the finger was covered by gangrenous clot. The blood had reappeared in the urine. He was given calcium lactate and two injections of normal horse serum of 20 c.cm. each, which failed to control the hæmorrhage. He was admitted to hospital next morning, when he was extremely pale and practically moribund. Blood was still oozing from the fauces and anterior nares and from the lower lip.

Blood Examination.—Red cells 1,200,000 per c.mm. No nucleated cells. Hæmoglobin index 0·8. Anisocytosis. No basophilic punctation. No polychromasia. White cells 1750 per c.mm. Polymorphonuclears about 9 per cent. Small lymphocytes 84 per cent. Large lymphocytes 4 per cent. Myelocytes and promyelocytes 3 per cent. Thrombocytes—platelets—very much reduced in number, under 1/6 normal. Coagulation time not examined. Blood type II. Widal and Wassermann reactions negative. No tubercle bacilli in sputum or growth on culturing the blood, but the throat swab showed many rod-shaped organisms; no diphtheria. Van den Bergh's reaction negative, direct and indirect.

300 c.mm. of whole blood from the father were transfused into the patient and improvement took place at once. Bleeding ceased almost immediately, and in a few days the finger healed up and the throat condition cleared almost completely. The submaxillary lymphatic glands on both sides, which were enlarged, diminished rapidly. No enlarged glands were found anywhere else in the body, and no enlargement of the spleen was elicited by percussion, nor was the spleen palpable. The liver was not enlarged. Hæmic murmurs were present, but there was no signs of any organic heart lesion. The urine contained a slight trace of albumin, but no blood.

Treatment.—Gargle of acid carbolic for throat condition. Novarsenobenzol painted on the sloughing area. An acid mixture containing dilute hydrochloric acid thrice daily. Calcium lactate thrice daily. Intravenous injections of N.A.B. 0·45 g. at four days' interval. Three injections in all were given and no obvious effect was seen. Epistaxis began four days after the transfusion and was controlled by plugging the nares. Three days later some hæmaturia also occurred, and, as the epistaxis still continued, a second transfusion of 200 c.mm. was given, the father again being the donor.

Daily examination of the blood during this period showed no nucleated red cells. Hæmoglobin index never exceeded 0·9, and the white cells averaged 1000 per c.mm. with the granular cells never above 9 per cent. Thrombocytic count never improved. On the day following the second transfusion the index was still 0·9. The total white count had risen to 1250 per c.mm., but the granular leucocytes still formed only 9 per cent. of the total. Next day the white cells fell to 1050 per c.mm., and the hæmoglobin index was 1.

Four days later the patient showed petechiæ of the upper eyelids and became restless and vomited. Lumbar puncture yielded normal fluid. The restlessness changed gradually to delirium; the eyes deviated to the right and then to the left and the pupils became inactive; breathing became stertorous with left facial weakness; left arm flaccid, but not completely paralysed; left leg completely flaccid and paralysed; tendon reflexes absent, with extensor plantar response. In right leg tendon reflexes increased and extensor plantar response was present. After three hours patient expired. During the stay in hospital the patient had a temperature varying from normal to 104° F. on one occasion, but the average daily swing was from 99° to 102°.

Post-mortem Examination.

Brain: Large petechial hæmorrhages were present over the vault of both hemispheres near the longitudinal sinus. Multiple hæmorrhages all through the cerebral substance. No blood in the ventricles. Cerebellum studded with minute hæmorrhages all over its surface and through its substance.

Thorax: No lung disease; some œdema of both bases. Pleural cavities contained a small amount of blood-stained fluid. Some petechiæ on pleural surfaces.

Heart: Pericardial sac contained about 10 oz. of blood-stained fluid. Two large ecchymoses were present under the endocardium. All the valves were healthy and there was no sign of any endocarditis.

Spleen: Weighed 5 oz.; appearance normal. Culture taken—no growth. Malpighian corpuscles were not unduly prominent. No iron reaction.

Liver: Weighed 3 lb. Slightly fatty in appearance; capsules peeled normally. No perihepatitis. No iron reaction. In microscopic section slight necrosis seen in the centre of the lobules.

Gall-bladder and ducts healthy. Bile normal.

Kidneys appeared healthy except for some petechiæ in the substance and under the capsule. Adrenals normal.

Stomach and bowels were normal. A large old hæmatoma was found in the right iliac region behind the ascending colon and peritoneum. Appendix and caput cæcum healthy.

Thyroid normal. Lymphatic glands not enlarged except under the angles of the jaws; substance dark-coloured from blood resorption. Mediastinal glands not enlarged.

Bone-marrow: No red marrow present in humerus (upper end) or femur (upper end) or in sternum; substance cream-coloured in appearance. Medulla under microscope showed a complete absence of normal red cells, and no nucleated red cells or megakaryocytes were seen. No phagocytosis observed. The predominant cells were lymphatic. Much fat was present.

Summary of Case.

The striking features of this case are: the comparatively sudden onset of the illness and the complete absence of previous history of blood disease, or, in fact, of serious disease of any kind; the acuteness of the condition once started; the profuse hæmorrhages into the tissues and especially from the fauces, and the continued raised swinging temperature. Diagnosis is impossible in such a case without careful blood examination, and this places the condition within the group of diseases labelled aplastic anæmia. The case, clinically, gives the impression of an acute infective condition, which it may have been, but certain factors are against this. No organism could be isolated from blood culture and none from the spleen post mortem. The rise in temperature was definitely a later phenomenon than the petechial hæmorrhages. The foul condition of throat and lips, and of the small wound on the left middle finger, were at least a fortnight later than the petechiæ. The spleen was not enlarged and there was no enlargement of the lymph glands with the exception of the submaxillary glands, and this swelling was definitely a result of blood resorption and local infective material. Moreover, should an organism be isolated from the blood in such a case, it is by no means certain that it can be put down as the cause of the condition. Organisms are not uncommonly found before death, and in cases like that described, where the granular leucocytes are reduced to a minimum, organisms might exist in the blood as a result, and not necessarily as a cause of the agranulocytosis, which is really a breach of one of the body's defences.

Aplastic Anæmia.

"Aplastic anæmia," according to Hurst,[2]

"is the name given to a rare condition in which the bone-marrow cells cease to produce blood corpuscles in sufficient quantity to compensate for their destruction. In very rare cases it appears to be a primary condition. More frequently it is secondary to a primary hæmolytic anæmia in which the over-activity, which is the normal response to both hæmolytic and hæmorrhagic anæmia, leads to exhaustion; possibly the toxæmia, which is the cause of the excessive hæmolysis, also damages the bone-marrow. Primary aplastic anæmia is characterised by the absence of nucleated red cells or other evidence of activity of the bone-marrow in response to the anæmia."

In this description the author may have had chiefly in mind the red-cell-forming function of the bone-marrow, but when all the functions are taken into consideration the definition is very sound. The division of primary from secondary aplastic anæmia is evident, but further subdivision is necessary to distinguish the cases which compose the groups, as they exhibit very diverse clinical pictures. The function of the bone-marrow in health is the production of cells of various kinds, and the circulating blood may be regarded roughly as the mirror of its efficiency. The cells produced normally by the bone-marrow are the erythrocytes, the granular leucocytes of various kinds, and the thrombocytes, the so-called platelets. The work of Wright, to which very wide, if not universal, recognition has been accorded, showed that the thrombocytes are the product of the megakaryocytic cells of the bon marrow. The old ideas that they were artefact or extruded or separated particles of the other cel of the blood, are untenable. The function of bon marrow may be regulated by a hormone, as is tent tively advanced by Hurst. Where the hormo over-stimulates, the result is one of several conditio —e.g., polycythæmia rubra, or myeloid leukæmia where the hormone is deficient we get aplastic anæmi The theory is attractive in its simplicity and helpfu but it is merely a hypothesis, and hardly explai the selectivity of the hormone in its control over t production of the various cells. The truth is th the bone-marrow can be impaired or stimulated some, or all, of its functions.

Frank,[1] in 1915, described a disease-picture, which all the cell-forming functions of the marro were reduced very gravely, and there was a profu hæmorrhage. This he regarded as a separate diseas and gave it the name aleukia hæmorrhagica myelophthisis. Schulz and Friedemann,[3] in 192 described a condition which was also an aplast anæmia with reduction of the granular cells in t blood with, however, glandular and splenic enlarg ment, but without the hæmorrhagic tendencies the other. They named the condition agranul cytosis. Koehler [4] has fully described three cases the aplastic anæmia type, two of which showed seve lack of all the marrow-formed elements of bloc Erythropenia, leucopenia, with relative lymphoc tosis, and thrombopenia were present, and a promine clinical feature was hæmorrhage from the mouth a fauces. In the third case the erythrocytes a thrombocytes were not reduced much from norm and no hæmorrhages occurred. All three had rais temperatures and gave the impression of infectio no organisms were found, however, to explain t condition. Ellmer [5] has reported a case whi agrees with the picture of aleukia hæmorrhagica given by Frank and by Koehler, and with the pict of the case here reported. Schulz and Friedema insist on the absence of thrombopenia and hæm rhages in their description of the condition whi they term agranulocytosis. This is most probab not a disease sui generis, but a stage of a disea probably an infection leading to partial exhausti of the functions of the marrow, of which the granu leucocytic-forming function seems to bear the bru

In the case now reported all the cell-formi functions have been disastrously affected, the o cells which exist in the blood in anything approachi normal condition and quantity being the lymphocyt and they do not have their origin in the bone-marr The essence of the aleukia hæmorrhagica (wh descriptive name may be used till ætiology is bet known) is that all the functions of the bone-marr are severely affected and hæmorrhage takes pl from the fauces, which seems to be a site of electi but the hæmorrhages may be general. A rais temperature always accompanies the condition. is a disease of unknown causation, and natura can only be diagnosed after a very careful examinat of the history of each case. Morawitz,[6] for instan has reported a case of aplastic anæmia follow typhoid fever, and Schilling [7] one case following spr One of the essential features of aleukia hæmorrhag is the thrombopenia, which is associated with hæmorrhages. This is quite in line with the mod conception that the thrombocytes are a great fac in influencing the coagulability of the blood. faucial condition in the case under my care—of ooz and necrotic membrane formation—had, in opinion, the same causation as the other hæmorrha in the body, and was the result and not the cause the blood condition.

Benzol stands out as the most frequent cause injury of the bone-marrow, so much so that it been introduced by Korányi in an attempt to red the number of granular cells in myeloid leukæn but given up because of the impossibility of c trolling its effects. Radio-active thorium X has b used by von Plesch and Falta for the same purp

nd given up for the same reasons—unreliability of ction and impossibility of control. Over-response o Rontgen rays had produced the condition of leukia hæmorrhagica, as recorded by Decastello, oss,[8] Frank, and Whitby and Jackson.[9]

Treatment.

This is at best palliative. In view of the destruc-ve changes in the marrow it cannot be otherwise. Where the cause is known, its removal, as in the case benzol and X rays, is followed by regeneration nless the condition has gone too far. Where, owever, the ætiology is unknown—i.e., in the rimary essential aleukia hæmorrhagica—nothing ems to be of any service. Transfusion, as in my se, may cause a tremendous improvement for a tle time—it brings the patient back almost from e dead—but at best its effect is only temporary. emoval of the spleen has been recommended for rimary pernicious anæmia by Hoff,[10] Decastello,[11] lemperer, and Hirschfeld,[12] Walterhöfer and chramm,[13] and of late has been practised in this untry in hæmorrhagic conditions where platelets e reduced to a minimum. In aleukia hæmor-agica the reasons for the extirpation of the spleen, hich are valid in both the above conditions, are esent and cogent, but after serious consideration—ere being no manifest enlargement of the organ—decided against the operation. With a case less utely ill the proceeding might be tried.

Summary.

The case described showed the following features.) An illness of fairly acute onset with petechial emorrhages—later hæmorrhages from the fauces nd from the kidney. Death was due to hæmorrhages to the brain. (2) Temperature of septic type but ter in onset than petechiæ. (3) No signs of generation in spite of severe anæmia due to emorrhages. (4) Leucopenia was present, granular ucocytes were practically absent from the circulating ood, and small lymphocytes formed a very large roportion of the total white cells present. (5) eduction of thrombocytes to a minimum. (6) bsence of splenic and lymph gland enlargement.) Bone-marrow, examined post mortem, showed sence of erythrocytes, erythroblastic cells, mega-ryocytic cells, and granular cells.

The condition is a clearly defined clinical picture nd should be considered as a separate entity—eukia hæmorrhagica or myelophthisis—and, pending rther investigation, forms a subclass of primary lastic anæmia.

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"PAY-BEDS" AT THE ROYAL NORTHERN HOSPITAL.

An anonymous supporter of this hospital has promised to give £35,000 towards the erection of a wing for pay-beds on the lines suggested by the report of the King's Fund on condition that an equivalent sum is raised before the end of the year. The Royal Northern claims to have been the first of the great London hospitals to provide these facilities. The same donor has given £1500 for the purchase of radium and £700 for a new electric lift.

Clinical and Laboratory Notes.

CEREBRAL EMBOLISM

DUE TO AN UNUNITED FRACTURE OF THE CLAVICLE AND SUBCLAVIAN THROMBOSIS.

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THE following case, though unquestionably rare, is of importance because it establishes beyond doubt the manner in which cerebral lesions are occasionally caused by bony abnormalities at the root of the neck, and in particular by cervical rib.

The patient was a woman of 41 who came to the out-patient department complaining of pain and weakness in the right hand and forearm, made worse by movement. It had lasted some months and was slowly getting worse. The hand was cold and bluish and no pulse could be felt anywhere in the limb. On examining the neck the right clavicle appeared to be fractured. She was unaware that she had fractured her clavicle, but she was an epileptic, though she had had no fit for several years. The Wassermann reaction was negative, and there was no evidence of any central nervous lesion. The radiogram showed quite clearly an ununited fracture of the right clavicle. It was suggested that the condition might be congenital, but if that had been the case the two fragments would have been in a line, which they obviously were not.

The case at once recalled that about two years ago at a clinical meeting of the Neurological Section of the Royal Society of Medicine, Dr. C. P. Symonds showed two cases of left hemiplegia associated with a cervical rib on the right side, and absence of any pulse in the right upper limb. The explanation suggested was that the pressure of the cervical rib on the subclavian artery had led to thrombosis, and that the thrombus had extended backwards to the point of junction of the right common carotid, and a portion of it, becoming detached, had formed an embolus in one of the branches of the left middle cerebral artery. If this explanation were the true one there was a risk of a similar occurrence in this case, and a surgical colleague was consulted as to whether any operation was advisable. Arrangements were made for the patient to come into hospital, but before anything could be done an embolus occurred. She was taken suddenly ill with pain in the head and throat, vomited, and said she could not see. She gradually became unconscious and incontinent. At first there was some weakness of the right lower face, but later this spread to the left side, which was blown out more than the right on expiration, and the left arm and leg became paralysed. Some movement still occurred in the limbs of the right side on stimulation. The plantar reflex on the left side was extensor, on the right flexor. The knee- and ankle-jerks were only just obtainable. The abdominal reflexes were absent. The coma became deeper, with paralysis of all four limbs, the temperature rose to 105° F., and she died seven days after the first onset.

Pathological Findings.

A full autopsy was performed upon this case in the usual manner and the findings recorded. For the sake of correlation with the clinical picture, we shall describe the pathological changes in the order in which we consider they arose.

Right Clavicle.—An old-standing ununited fracture at the junction of the middle and outer thirds was present, with fibrous union and the formation of a false joint. The free ends were quite smooth and were displaced backwards and slightly downwards towards the right subclavian artery.

The Systemic Circulation.—The arch of the aorta, innominate, and right subclavian arteries were carefully dissected out in situ, and upon opening these vessels an organised and very adherent thrombus was found, occupying the first and second parts of the subclavian. This thrombus commenced about ⅜ in. distal to the division of the innominate into the right common carotid and subclavian arteries, and extended along the latter for a distance of 1½ in. The third part of the subclavian appeared free from thrombosis, but commencing at the origin of the circumflex another large adherent thrombus was found occupying

¾ in. of the axillary artery. Beyond this point no further thrombosis was found either in the brachial or radial arteries of that side. Comparison of the right and left brachial arteries showed narrowing of the lumen of the vessel on the right side. The aorta, innominate and right and left carotid arteries were free from antemortem clot. The thoracic and abdominal viscera exhibited no important pathological changes.

The brain, together with its vessels at the base, was removed carefully, placed in 10 per cent. formalin to harden and then examined. A well-marked embolus was found at the division of the basilar artery into its terminal branches, and microscopical examination showed this to consist of partly digested fibrin with but few leucocytes and practically no recognisable red cells; it was obviously of antemortem origin. To naked-eye examination there seemed little obvious softening in the pons, crura, or occipital lobes, but histological examination of these various areas showed well-marked softening to the extent of extensive necrosis in the upper and mid pons and in the crura. We were unable to demonstrate a similar condition in the occipital lobes.

These findings, taken in conjunction with the clinical picture, suggest that the right clavicle (fractured no doubt during an epileptic fit and unnoticed by the patient) had at the time of the fracture or since, caused damage to the right subclavian artery resulting in thrombosis. The resultant embolus in the basilar artery is then readily explained by the escape of a fragment of the thrombus up the right vertebral artery, and this would seem to be the only explanation.

This case is obviously analogous to the two cases of cervical rib reported by Symonds,[1] although the actual cause was different; and it demonstrates that thrombosis of the subclavian followed by embolism of one of the cerebral arteries is the sequence of events in such cases, and so far as we are aware this had not been actually demonstrated by autopsy before. The thrombus in the subclavian had evidently existed already for several months. The practical point which emerges is that such conditions, though very rare, are liable to lead to cerebral embolism, and this liability emphasises the importance of immediate surgical intervention in those cases where cervical ribs or analogous conditions are showing signs of compressing the subclavian.

[1] Brain, June, 1927, l., 259.

EPHEDRINE AND EPHETONIN.

By F. R. Curtis, M.B., Ch.B., M.Sc. Leeds.

(*From the Department of Physiology, University of London, King's College.*)

Ephedrine and ephetonin are now being fairly extensively used in the treatment of asthma, for they produce dilatation of the bronchi in the same way as adrenalin, though their effect lasts much longer than that of the latter. They are optical isomers, having the empirical formula $C_6H_5.CHOH.CH.CH_3.NH.CH_3$. The former is lævo-rotatory, and occurs in Ma Huang (*Ephedra vulgaris*); the latter is optically inactive, and has been synthesised in the laboratories of E. Merck, of Darmstadt, Germany.

Recently it was stated by Kreitmair[1] that ephetonin is as active, weight for weight, as ephedrine, in spite of the fact that ephetonin contains 50 per cent. of dextro-rotatory ephedrine, which is almost devoid of activity. These findings are not consistent with expectations derived from our knowledge of the behaviour of other optically active substances, as, for example, the hyoscyamines and adrenalin. Chen,[2] while admitting a qualitative similarity between ephedrine and synthetic ephedrine (ephetonin), found that in man the latter does not produce nearly so marked an effect on the blood pressure as ephedrine.

The experiments on which Kreitmair based his conclusions regarding the comparative activities of ephedrine and ephetonin are open to criticism. His method was to determine the relative effects on the blood pressure of decapitated cats of small doses of the two substances, the doses employed being 0·05 mg. per kilo.

Now, as Barger and Dale[3] pointed out, in the case of the relatively inactive amines, such small doses are quite unreliable quantitatively. Further, Chen and Meek[4] showed that ephedrine produces a transient tolerance, and I have found it impossible to obtain equal rises of blood pressure even using equal doses of the same substance. Chen regarded any attempt to settle the question by experimental methods as impracticable, but this paper sets forth the results of what may be called a statistical method of approaching the problem.

Cats, with brain and medulla destroyed, were employed as test animals, and the blood pressure was recorded by means of a mercury manometer attached to a cannula in a carotid artery. Advantage was taken of the fact that after small doses of adrenalin there appears to be very rapid recovery of the circulatory system to its previous state. Accordingly, a series of 12 cats was divided into three groups A, B, and C, of four cats each. Each cat received as a first injection 0·4 c.cm. of a 1/10,000 solution of adrenalin hydrochloride. The animals of group A then received 4 mg. of ephetonin, those in Group B 2 mg. of ephedrine and those in Group C 2 mg. of ephetonin. After each injection of adrenalin, ephetonin, or ephedrine, the rise of blood pressure was measured in mms. of mercury. It was then possible to obtain a ratio between the effects produced by adrenalin and ephedrine, or ephetonin. The following tables give the results obtained.

Group A.

—	Rise after adrenalin in mm. Hg.	Rise after ephetonin in mm. Hg.	Adrenalin rise / Ephetonin rise
Cat 1.. ..	96	86	1·1
Cat 2.. ..	146	132	1·1
Cat 3.. ..	92	64	1·4
Cat 4.. ..	115	132	0·8
Average ..	112	103	1·1

Group B.

—	Rise after adrenalin in mm. Hg.	Rise after ephedrine in mm. Hg.	Adrenalin rise / Ephedrine rise
Cat 1.. ..	136	120	1·1
Cat 2.. ..	124	130	0·9
Cat 3.. ..	138	124	1·1
Cat 4.. ..	128	108	1·2
Average..	131	120	1·1

Group C.

—	Rise after adrenalin in mm. Hg.	Rise after ephetonin in mm. Hg.	Adrenalin rise / Ephetonin rise
Cat 1.. ..	122	72	1·7
Cat 2.. ..	124	62	2·0
Cat 3.. ..	84	32	2·6
Cat 4.. ..	140	62	2·3
Average..	118	57	2·15

It is hardly necessary to point out that there may normally be quite considerable differences in the pressor responses of the different animals as expressed in mm. of mercury. For that reason adrenalin was used as a sort of index of the intensity of the circulatory reaction as compared with that produced by ephedrine or ephetonin.

From the tables it will be seen that compared with adrenalin, 4 mg. of ephetonin and 2 mg. of ephedrine give an equivalent effect, as would be expected from the fact that 4 mg. of ephetonin contain 2 mg. of ephedrine and 2 mg. of inactive dextro-ephedrine. The result receives further substantiation in the third table, where it is seen that 2 mg. of ephetonin (containing actually only 1 mg. of l-ephedrine) produces half the effect of 2 mg. of ephedrine.

Summary.

Experimental evidence is submitted to show that phedrine is approximately twice as active as phetonin.

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Medical Societies.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

Annual General Meeting.

THE eighty-seventh annual meeting of this Associaion took place on July 11th, 12th, and 13th at the Vest Riding Mental Hospital, Wakefield, Yorks, nder the presidency of Prof. J. SHAW BOLTON.

Foreign psychiatric societies were represented by)r. E. N. Brush (U.S.A.), Prof. Wimmer (Denmark), nd W. Hans Evensen (Norway).

At the business meeting the following were elected ıonorary members: Dr. C. Hubert Bond, C.B.E.,)r. Eugen Bleuler (Zurich) and the Rt. Hon. Hugh Iacmillan, P.C., K.C. The corresponding members lected were: Dr. Malcolm A. Bliss (St. Louis, U.S.A.),)r. C. O. Ariens Kappers (Amsterdam), Dr. George I. Kirby (New York), Dr. Giacomo Pighini (Reggio, Emelia, Italy), and Prof. August Wimmer, (Univerity of Copenhagen). Prof. C. E. Spearman was ppointed the Maudsley lecturer for 1929.

The Gaskell gold medal and prize for 1927 was resented to Dr. Elizabeth Casson and that for 1928 vas awarded to Dr. F. R. Martin. It was announced hat H.R.H. Princess Mary, Viscountess Lascelles ad been pleased to signify her willingness to accept he Association's nursing medal in gold and the ertificate in mental nursing (honorary).

Prof. SHAW BOLTON took for the subject of his residential address

The Evolution of a Mental Hospital: Wakefield, 1818–1928.

Ie said it was 19 years since the hospital provided a resident of the Association, in the person of Dr. Bevan-Lewis. Wakefield could claim to be a mother f asylums, and it had reached a distinction accorded o but few. The first Wakefield Asylum opened in 818. In 1853 the second was added, which accommoated 150 patients. The third was the modern building. ir William Ellis who was the first director was fterwards at Hanwell. The President quoted at length om the old regulations, some of which showed much oresight, while others would now be regarded as umorous. The director was the superior officer, and e also acted as apothecary, surgeon, steward, and reasurer. Originally two visiting surgeons and two isiting physicians were appointed, but in 1821, robably on account of the confusion resulting from ual control, the visiting magistrates much increased he powers of the director and diminished those of the hysicians. In the minutes of July, 1857, there ppears a reference to Dr. Henry Maudsley, who was hen on the Wakefield staff, and one of the earliest orkers in the Wakefield Laboratory was Sir James richton-Browne. The latter not only fostered esearch in the institution, but he did his best to romote a general medical interest in the work and dministration of the hospital. The appointment of esident clinical assistants, unpaid but having free oard, lodging, and tuition, dates from early times.

The President proceeded to sketch the various dditions to buildings, and the improvements in dministration and treatment which were carried out in the progress of the years, discussing at some length the question of punishment of patients for gross misdemeanours. He added that since he took office mechanical restraint and punishment had ceased, both in fact and in name. He declared that if he had the authority he would render restraint of all kinds not only illegal but criminal on the part of any individual who ordered it without having first experienced its effects on his own person. He drew attention to the close association of the mental hospital with the University of Leeds and the advantages accruing therefrom, making particular reference to the establishment of the pioneer diploma in Psychological Medicine.

Sir ROBERT ARMSTRONG-JONES proposed, and Dr. J. BRANDER (Bexley) seconded, a vote of thanks for the address.

On Thursday, July 12th, Dr. M. J. MCGRATH (Wakefield) opened the day's proceedings with a paper on a description of the steps taken in a mental hospital to prevent the spread of dysentery and allied infectious diseases. He said it was essential to have isolation wards for new admissions and infected cases. Infection of inmates occurred not only through infected cases transferred from other places, but from new members of the staff. Hence every fresh patient and each new member of the staff was submitted to a special physical examination for infections. Of 467 probationers 83 had to be rejected as a result of the examination. The organisation of this work had led to good results. It was insisted that an institution entirely free of dysentery was peculiarly liable to infection from without, particularly if a foreign strain were brought in. Investigations led to the conclusion that periodic temporary immunisation of institutions in this respect was constantly taking place.

In connexion with this subject the PRESIDENT read a part of his Presidential address, postponed from the previous day, describing the seriousness of some of the epidemics of dysentery which at various times in the past had afflicted the inmates. The precautions now taken to detect and when found to isolate and treat thoroughly a case of bad diarrhœa or dysentery were given in detail.

Other Communications.

Mr. A. L. HOWDEN (Wakefield) read a paper and demonstrated the bacteriological methods employed at the hospital in regard to the detection of dysentery and allied infectious diseases.

Dr. J. R. LORD (Horton) spoke in praise of the modern skilled laboratory assistant, and said this was the first occasion he recollected on which one had read a paper before the Association. He congratulated Mr. Howden on his paper and demonstration.

Dr. F. A. PICKWORTH (Birmingham) said that at the Birmingham Mental Hospitals, in addition to isolating those who showed a positive Widal, they treated likewise all who had had contact or relation with typhoid patients, or who showed infective organisms in the fæces.

Dr. F. R. P. TAYLOR (Hellingly) said that at Hellingly dysentery cases came among the patients transferred from other hospitals, and it was not until regular bacteriological examinations were made the rule that real good ensued, though isolation had been previously carried out.

Prof. J. W. MCLEOD (Leeds University) expressed his surprise that Shiga infection epidemics did not occur in mental hospitals. He dealt with a number of points in technique.

Dr. C. HUBERT BOND said these communications must have brought home to everyone the necessity of having a laboratory attached to mental hospitals.

Dr. J. I. RUSSELL (York) referred to the different types of dysentery and the difficulties of differentiation.

Dr. LL. WYNN JONES (lecturer in psychology, Leeds University) read a paper on an investigation into the significance of perseveration. He said there were five kinds of perseveration—sensory, motor, ideational, emotional, and conative. He dealt only with the first three.

Prof. B. A. McSWINEY (Leeds University) contributed a paper on Physiology in Relation to Psychological Medicine. He said that the paucity of information on cerebral function in the text-books was due to absence of methods available to investigate the normal activity of the higher nerve centres. The explanations advanced often took no account of the function of the lower nervous system in bringing about the requisite coördination and relationship between the different organs of the body. If knowledge of the physiological factors controlling mental activity was to advance, the physiologist must continue to make measurements on structures which he was able to control, and carry out investigations in which he was able to isolate the disturbing factors. He illustrated his thesis by a number of examples, many of which were illuminated by the work of Sherrington and others.

Dr. IAN SUTTIE (Fife) read a paper on Neurotic Superstructures in Certain Psychoses. The paper consisted of an elaborate justification of the treatment of early cases by psycho-analysis, and illustrated well the degree of concentration and patience required for the successful pursuit of this method.

The PRESIDENT followed with a lantern demonstration of the stages the egg passed through in the germination of the chick, bringing out well the final mechanism which resulted in the emergence of the chick into the outer world.

On Friday, July 13th, Dr. K. C. PADDLE (Wakefield) read a paper on Review of Blood Pressure in the Insane. It was based upon the careful examination of 920 male patients, care having been taken not to excite the patient before or at the time of the examination. The cases were divided into seven groups. Summarising his results, Dr. Paddle said that in melancholia 51 per cent. of cases had a subnormal blood pressure; in mania 51 per cent. had a subnormal pressure; in epilepsy 70 per cent. had a subnormal pressure. The average blood pressure in the insane varied according to the age. The majority of insane epileptics had a constantly low pressure independently of the frequency of the fits or the kind of epilepsy.

Dr. F. A. PICKWORTH (Birmingham) contributed a paper on variation in the agglutinin formation in mental hospital patients and its probable relation to focal sepsis. The main purpose of the communication was a consideration of how the system might be invaded by organisms which demanded a considerable production of antibodies to effect their destruction and removal from the system. The organisms normally present in the jejunum evidently migrated to higher levels, as shown by examination of over 200 cases. The inter-relation between focal sepsis and the variation in agglutinin formation of the insane probably occurred through the medium of a high intestinal sepsis caused by infection with paratyphoid or food-poisoning organisms.

Dr. J. F. SMYTH (Wakefield) spoke on the relation of the *Spirochæta pallida* to the histological changes in dementia paralytica. He said that spirochætes were found in 75 per cent. of the cases; they were found most frequently in cases which ran a stormy course. The number of cases examined was 52. The most that could be hoped for under treatment was an arrest of the damaging process to the cortex.

Dr. JOHN BRANDER (Bexley) discussed general paralysis of the insane as a clinical and pathological entity.

Prof. W. H. MAXWELL TELLING (Leeds University) spoke of the value of psychical research to the physician. He declared he had received great benefit from a study of psychic phenomena, and proceeded to review the present state of knowledge and the tendency in the profession concerning this subject. His own attitude was sympathetic towards such subjects as telepathy.

The concluding item was a demonstration by the PRESIDENT on cases of sense deprivation and the primary importance of the aural centres in the cortex cerebri.

ANNUAL CONGRESS OF THE ROYAL SANITARY INSTITUTE.

PLYMOUTH, JULY 16TH–21ST.

THE inaugural meeting on Monday has alrea been touched upon. During the remainder of t week the work of the Congress was, as usual, divid up among many sections. The following notes d with some of the points of special medical inter which arose in the course of the meetings.

Hygiene in Industry.

Mr. Ramsay MacDonald, in his presidential addr to this Section, compared the worker with a delic scientific instrument; the old fashion of putting h to do a job just as it came was now abandoned everyone who had any common sense. Public hea had the individual as its aim, but the community its medium, and included both self-help and mut aid. The work of bodies such as the Natio Institute of Industrial Psychology, the Medi Research Council, and the Industrial Fatigue Boa was putting industrial hygiene in its proper pl as one of the most vital concerns of our country. were still in the transition stage and did not whc heartedly accept the doctrine that the conduct industry is a national concern. The latest attem by the General Council of the Trade Union Congr to explore the conditions of industrial peace were essential contribution to the practical success recent scientific investigations. In industry strai fatigues, and worries were as poisonous to life as w disease germs. A close and detailed study of use to which the human body is put in industry w needed. Mr. MacDonald gave many convinc illustrations from the experience of Dr. C. S. My of unnecessary fatigue and waste of muscular effort factories, which had been easily remedied witl little study. The temperature and ventilation workshops affected not only physical condition the nerves, as shown by temper, general ease, a happiness. It had been found, also, that men var in their suitability for working with machines runn at different speeds; of two men working side by s at similar machines one might be brought to the ve of nervous breakdown by inability to keep up, wl the other might complain of boredom from slowness of the pace. The hygienist was handicap by the fear of the worker that industrial econo meant intensification of labour for him. The solut of all such problems was of immense importance industry both as regards its economic working and internal harmonies, and this department of resea was essential for moulding our organisation of ind trial and sociological relations into a coöperat concord.

International Preventive Medicine.

Dr. L. Rajchman, Medical Director and Secretary the League of Nations Health Committee, in presidential address to the Preventive Medic Section, outlined the policy and methods which l been evolved by seven years' work on the part leading men of many countries of all continents. referred to the services of epidemiological intellige and public health statistics, of technical publicatio and of permanent liaison work with national sanit administrations; to commissions at work and org isations in progress in many countries; and to inve gations of many problems, including those of sleep sickness in Equatorial Africa, small-pox and encepl itis in Northern Europe, leprosy in South America the East, malaria throughout the world. Ot hopeful enterprises included the practice of p ventive methods by health insurance organisatio the adoption of common standards for sera vaccines, and common lists of causes of dea and the study of preventable causes of inf mortality.

he Present Position of the Tuberculosis Problem.

Dr. F. J. H. Coutts (Ministry of Health), in opening his discussion, pointed out that the conspicuous fall the mortality-rate from 1851 to 1910 was at the ge-period 20–25 years. Since 1910 the greater ecline had been at later age-periods, while at age-eriods 15–20 and 20–25 there had been little reduction mong males and an actual increase in the female ortality. This disquieting feature of the break-own of young adults from tuberculosis needed ucidation and investigation in each district. Much rther investigation was also needed of the supposed mmunity acquired by children who suffered from eri-bronchial or other mild forms of tuberculosis. e thought that direct measures had played their art in the decline of tuberculosis and quoted intensive xperiments in Sweden and the U.S.A. in confirmation. s regards treatment, good results were being obtained om the induction of artificial pneumothorax and horacoplasty, and the greatest sphere of usefulness artificial light treatment was in the treatment of pus.

Dr. Marcus Paterson said that we taught the fectious consumptive how to avoid infecting his vn family and how to lead a healthy life, but we d not educate the public in the fact that the use of pocket spittoon by the consumptive was a pro-ction for them. Medical students, except in dinburgh, did not receive adequate instruction in e management and treatment of tuberculosis.

Shell-fish.

The cultivation and marketing of shell-fish in od condition was dealt with from the point of view the trade, of the Fishmongers Company, and of the edical officer of health. There appeared to be neral agreement as to the great value of the bacterio-gical tests originated by the Fishmongers Company, upled with inspection of the beds and an intimate owledge of the topographical conditions.

Mr. James Y. Johnston (Prime Warden of the mpany) described the action taken by his Company organise an influential deputation to the Govern-ent, which had resulted in the appointment of ecial committees, one for investigation of the whole estion of pollution of rivers and estuaries, and the her for instituting research as to sewage effluents.

Many medical officers of health spoke of the ready lp afforded them by the Fishmongers Company the case of doubtful shell-fish, and it was pointed t by Prof. J. W. H. Eyre that the Company ceives samples for testing from all parts of the untry, and that the information in its possession to samples and beds is freely available both for e trade and for medical officers of health.

Housing.

The discussion on housing was opened by Councillor lbert Webb, chairman of the Plymouth Housing mmittee, who dealt chiefly with methods of house-rchase, the renovation of existing privately owned uses, and the clearance of congested areas. He mly believed in occupier-owners and, during the st three years, the Corporation had advanced 50,000 to enable tenants of limited means to come owners. The Corporation borrowed at ¾ per cent., and lent at 5¼ per cent., and the ½ per nt. paid management expenses, so that this scheme as self-supporting.

The Corporation had also provided for the sale of unicipal houses to existing tenants on easy terms. he only initial outlay for the tenant was a deposit £10 and the cost of transfer and mortgage deed. or example, a "non-parlour" house, rented at . 9*d.* per week, could be purchased by the payment 9*s.* 6*d.* per week for 30 years.

The Corporation had renovated 147 properties nder Section 3 of the 1925 Act, at a cost to the wners of £25,000, to be recovered from them in payments spread over ten years. Most of this ork was done by agreement with the owners. hey had a new scheme, which was provisionally approved by the Ministry of Health, for reconditioning certain houses in a congested area and demolishing the remainder. Such a scheme might to some extent cater for the casual worker. An experiment in providing small houses for special cases was being considered.

Several speakers congratulated Councillor Webb on the housing activities of Plymouth. From all quarters came the admission that up to now nothing had been possible in the provision of houses for the poorest class and the low-paid worker with a large family.

Dr. C. Lander (Devonport) thought they should recognise that economic rents were frankly impossible, and that housing should be regarded as a State social service. There must be a subsidy and it should come from the National Exchequer. A valuable contribution came from Miss J. M. Upcott, housing manager to the Chesterfield Town Council, on the management of municipal housing estates on "Octavia Hill" lines. She advocated a gradual preparation and education of slum tenants for their removal to better quarters, with perhaps a transition period spent in reconditioned houses.

Milk.

Dr. W. G. Savage opened this discussion with a paper on Milk and Tuberculosis. He regarded the grading of milk as a "magnificent educational gesture." The Tuberculosis Order, as at present worked, was of no value whatever. It would be a continuing expense, with no reduction of bovine tuberculosis and no protection to the public from tuberculous milk. Before the country was committed to the expense of routine veterinary inspection of milk herds, they should be quite clear in their minds as to what they expected this inspection to accomplish and draw up a carefully thought-out scheme, including the coöperation of the dairy farmers.

In the discussion the case for dried milk was put by Mr. F. O. Morris, the case for pasteurisation by Dr. S. G. Moore, and there was a general admission that the eradication of tubercle was so remote that some method of rendering raw milk safe must be adopted in the meantime.

Immunity Methods in Scarlet Fever and Measles.

Dr. R. A. O'Brien showed that the Dick test, the Schultz-Charlton test, active immunisation, and the use of antitoxin have been firmly established in the case of scarlet fever. There was still lacking an antiserum to combat septic conditions which had already appeared, and the problem of the convalescent carrier or return case was unsolved. Convalescents were discharged with hæmolytic streptococci in their throats indistinguishable by any available test from scarlet fever streptococci, but it was not as yet practicable to ask for negative cultures before release, and the medical officer could only adhere to the rule of sending out cases after the restoration of normal health with an absence of discharges from mucous membranes. As regards measles, the utility of the serum of convalescents for conferring either temporary complete protection or for giving active lasting immunity, according to the date after exposure to infection on which the dose was given, was now accepted. The problem for sanitary authorities was to provide and maintain a supply of this serum and to make appeals for volunteer donors.

Dr. W. A. Lethem (Ministry of Health) pointed out that though last year measles killed five times as many children as scarlet fever, the public was still not convinced of its dangers. Schemes for the supply of the serum of convalescents were in operation in several towns in France, Germany, and the U.S.A. Dr. Lethem outlined a scheme for districts in this country. The serum was effective from the eighth to the fourteenth day after the temperature fell. It was preferable to obtain it from adults who could easily spare enough to immunise some 30 children. Adults were usually treated at home by general

practitioners. The medical officer of health should hold a meeting with practitioners to explain the scheme and seek their coöperation in obtaining donors. He should select a laboratory and arrange for an expert from the laboratory to collect the blood. The serum remained potent for many months, if kept at a low temperature. He thought donors would be readily obtained when they understood the great benefit they were conferring on the community without harm to themselves. If the supply was limited, its use should be restricted to children for whom an attack of measles might be a matter of extreme gravity: if more ample, it might be used for all very young children who had been exposed to infection.

Dr. W. T. Benson (Edinburgh), Dr. J. Parlane Kinloch (Aberdeen), and Dr. E. H. R. Harries (Birmingham) confirmed from their experience the views expressed by Dr. O'Brien and Dr. Lethem.

Nursery Schools.

Miss Margaret McMillan described, with the aid of lantern slides, the wonderful changes effected in the pre-school children from the congested areas of Deptford and Greenwich by attendance at the Rachel McMillan open-air garden school. She explained the methods adopted and claimed that by economical management and simple buildings the cost is less than that of an ordinary infant school. The parents contribute, but in return the children get three good meals a day. Nursery schools may be a confession of failure—of failure under existing conditions to secure a good home for each child with reasonable access to playground or garden—but the practical sanitarian acknowledges that congested areas in our industrial towns will hardly be removed in one generation and that there is, in the meantime, a clamant need for many more "Rachel McMillan" schools run by enthusiasts like Margaret McMillan. It is not surprising, therefore, that the resolution, in favour of more open-air nursery schools, and calling upon local authorities to make the nursery classes in the Fisher Act of 1918 operative without delay, met with general acceptance by the Section. Prof. Winifred Cullis, in seconding, emphasised the fact that during these years the foundations of health, character, and education were laid, and that children who had been under the supervision of welfare centres showed fewer defects when they reached the school-entrance age.—Dr. Mabel G. Brodie also testified to the value of such nursery schools; and Dr. E. G. Annis (M.O.H., Greenwich) confessed that Miss McMillan's work for the children of his borough had converted him from a sceptic into a firm believer. The open-air régime and care taken quite prevented outbreaks of infectious disease in the school.

Light Treatment.

Dr. Albert Eidinow described the biological actions of light, while Dr. H. Stanley Banks (Leicester) and Dr. W. Allen Daley (Hull) dealt with the practical application of light treatment to public health work.

Dr. F. G. Bushnell (Devon) spoke on uses and abuses of light treatment, and all the three last-mentioned speakers sounded a note of warning as to exaggerated statements and commercial exploitation of this treatment.

Dr. Daley pointed out, from his experience, the danger of this treatment being added to the list of so-called medical baths and employed without proper medical supervision. He summed up by expressing the opinion that light treatment was a permanent addition to the disease-preventing and disease-curing methods which should be provided by a local authority, particularly for the sun-starved denizens of our towns, that the use of irradiated foodstuffs was not a substitute for light clinics; and that the provision of light treatment by baths committees should be watched with great care.—A resolution was adopted recommending the establishment of public sun and air bathing facilities by local authorities especially for children.

Health of Seamen.

Fleet-Surgeon W. E. Home said that durir this year, for the first time, fairly accurate statisti of the mortality of seamen, occupied and retire had been published by the Registrar-General. The mortality from disease was 75 per cent., and fro injury five times greater than those of "all males The cubic space of British seamen had been increas from 72 cub. ft. to 120 cub. ft., while that of t lascars had remained at 72 cub. ft. Coincidently, t phthisis death-rate of British seamen had declin by 40 per cent., and that of the lascars only 15 per cent. The seaman lived in his ship for hours in the day, and his living accommodati should be passed by a health authority. Some of t seaman's needs were: care of water-supply, was places, good galleys, good w.c.'s, drying-rooms, a accommodation aft.—At a conference of p sanitary authorities, held on Thursday, July 19t the following resolution was unanimously adopted:

That the Council of the Institute be recommended direct the attention of the Government to the desirabili of the care of the health of the men of the Merchant Serv being placed in the charge of the Ministry of Health.

The motion was proposed by Fleet-Surgeon Hom and seconded by Alderman F. Askew, chairman, H and Goole Port Sanitary Authority, who toget sent the motion up to the Council of the Institu to get it on the agenda of the Conference. T motion was supported by Commissioner H. Miller, the St. John's Ambulance Brigade, in an excelle speech, and its unanimous acceptance was ensur from the first.

National Health Insurance Service.

On the last day of the Conference Mr. Henry Less in a presidential address, showed how financial c siderations were retarding the proper developm of the Service, and Mr. W. Gill Hodgson, clerk the Liverpool Insurance Committee, expressed opinion that the present scheme should be perfec by the addition of specialist and consultant servi with laboratory aids and of dental treatment bef any further classes of persons, such as dependa of insured persons, were brought in.

DONATIONS AND BEQUESTS.—Sir Henry Samm Bart., of the Manor House, Willerby, Yorks, shipow left £23,000 for charity, including £10,000 to the I Infirmary, £5000 each to the Seamen's Mission, H and the Henry Samman Chamber of Commerce End ment, Hull, £1000 each to the Port of Hull Society Sail Orphan Homes, and to Hull Seamen's and Gen Orphanage, and £500 to Victoria Hospital for Children, H —The Right Hon. Satyendra Prasanna, Baron Sinha Raipur, of Delhi, India, and of London, left Rs.10,000 e to the hospital attached to the Belgatchia Medical Coll the trustees of the Sadharan Brahmo Samaj of Cornwa street, Calcutta, the trustees of the Bhowanipur Sanmi Brahmo Samaj, the Sambhunath Hospital, Bhowani and the Calcutta Orphanage of Bulloram, Deys-str Calcutta. And if he had not already made provision he had intended to do in his lifetime) for the mainten of the Middle English School and Charitable Dispen which he had built and for many years maintained at Rai then Rs.50,000 upon trust for investment and the inc applied for such purpose.—Mrs. Emily Crossley, of H gate, left £2000 to the Ancoats Hospital, Manchester, a £1500 for the general maintenance of that hospital £500 towards the general maintenance of the Convales Hospital at Warford, Cheshire, in connexion with Ancoats Hospital.—Mr. Samuel Palmer Cooper, of Mos Birmingham, left £1000 each to the General Hosp Birmingham, Queen's Hospital, Birmingham, the Birm ham and Midland Free Hospital for Sick Children, an Dr. Barnardo's Homes; £500 each to the Birmingham Midland Eye Hospital, the Birmingham and Mid Homœopathic Hospital, the Birmingham Royal Insti for the Blind, the National Institution for the Blind, the Children's Hospital, at Cold Ash, Newbury, if his n Mary Katherine Cooper, is matron there. After o bequests the ultimate residue of the property is left bet the General Hospital, Birmingham, Queen's Hosp Birmingham, the Birmingham and Midland Free Hos for Children, and Dr. Barnardo's Homes.

Reviews and Notices of Books.

IOLOGICAL INTRODUCTION TO THE STUDY OF NEUROLOGY AND PSYCHOPATHOLOGY.

Introduction biologique à l'étude de la neurologie et de la psychopathologie. By C. V. MONAKOW and R. MOURGUE. Paris: Felix Alcan. 1928. Pp. 416. Fr.80.

THOSE who endeavour to keep in touch with the ilosophical background of biology are aware of e existence of a reaction against the confident echanist and materialist theories of the last century. the English-speaking world Prof. Whitehead, of. Lloyd Morgan, and General Smuts are among ose now seeking to construct new biological conpts which shall be more adequate to explain the haviour of living organisms. No biological hypoesis which aims at transcending pure mechanism n fail to be indebted to Bergson, who 30 years ago as a voice crying in a wilderness of determinism. of. von Monakow and Dr. Mourgue freely acknowlge this debt in the pages where they impugn rrent concepts in neurology and psychiatry on ounds which Bergson has rendered familiar. They ate that pathological phenomena are considered in olation from the organism; also that the existing nception of function is too static and ignores the ne factor. They believe that evolution is not fficiently recognised to be a qualitative as well as quantitative change, and that language itself, ring to its mode of development, is unsuited to deal th the essential mobility of function. Owing to ese disabilities modern neurology tends to see in thological states of the nervous system no element ve functional deficit, and does not take into account e compensatory efforts, evoked by injury from e organism, which distinguish living creatures m machines. To overcome these defects of method e authors find necessary new concepts which require w terms for their designation, and thus they roduce us to "klisis" and "ekklisis," "protodiasis," and "diaspasis," "hormétères" and "noormétères," "syneidesis" and "hormè." The most portant of these conceptions appear to be the two t named. "Syneidesis" is described as "conscience logique" and is a principle of auto-regulation oked to explain the efforts of an organism to mpensate for its defects. "Hormè" is the undifferentiated drive from which instincts derive their pulsion and recalls Bergson's "élan vital."

Armed with these new weapons of thought Prof. n Monakow and Dr. Mourgue range over the whole ulm of neural function from embryology to religion, d from the conception of causality to the permeility of the choroid plexuses. After an introductory apter they trace the development of character in ms of the integration of instincts. The evolution movement, orientation, and language is then consered. The authors next deal at length with disegration of neural function, giving special conseration to aphasia, and severely criticising the ories of an anatomical localisation of speech entres." Next come chapters devoted to the choneuroses and the psychoses, schizophrenia ng taken as an example of the latter. The book cludes with a review of the evidence that abnormal meability of the choroid plexuses plays a part in ætiology of disease of the nervous system.

Criticism of this book is inevitably disarmed by width of its scope, the laudability of its aim, and ingenuousness of its title. The names of the thors are a sufficient guarantee that the theories veloped are firmly based upon an expert knowledge the histology of the nervous system and a wide nical experience. That such authorities should be profoundly discontented with current physiopathological ideas is of considerable moment, and their attempt to provide a more truly biological basis neurology and psychiatry cannot fail to be allenging and stimulating. How far they have succeeded in their object must be left to the decision of the individual reader. Those who are satisfied with a mechanistic physiology are unlikely to be led to alter their minds. Those who regard such concepts as inadequate to represent the living reality may perhaps find an effective substitute in "syneidesis" and its confrères. But many to whom such principles are incomprehensible will probably finish the book a little disheartened. Is it possible that owing to the structure of our minds and language we are of necessity condemned to employ scientific methods which can never tell us the whole truth about reality? Or may we hope with Prof. von Monakow and Dr. Mourgue that in time we shall succeed in forging new instruments of thought with which to enlarge our apprehension?

ANTHELMINTICS AND THEIR USES IN MEDICAL AND VETERINARY PRACTICE.

By R. N. CHOPRA, M.A., M.D. Cantab., Major I.M.S.; and ASA C. CHANDLER, M.Sc., Ph.D. London: Baillière, Tindall and Cox. 1928. With 5 plates and 65 figures in the text. Pp. xii.+291. 22*s.* 6*d.*

THIS book is written to display for medical and veterinary practitioners both recent and time-honoured methods of attacking helminths. The prime consideration in anthelmintic treatment, it is insisted, must be the patient's safety. The value or otherwise of diet and purgatives, the method of administration of the latter, and the criteria of cure are discussed. A chapter on helminthological considerations bears evidence of haste in preparation. The key which it contains, and which purports to deal, among other matters, with the commoner and more important adult nematodes parasitising man, is in many ways unsatisfactory. No mention is made of ascaris, trichuris, male threadworms, and the hookworms; the description of hydatid cysts seems to imply the necessary presence of scolices, and in the figures of ripe segments of *Tænia solium* and *T. saginata*, described as being drawn to scale, the scales are not correct. The statement that microfilariæ are injected by mosquitoes will not find general acceptance. Several proper names are confusingly misspelt. The chapter on correlation between the chemical composition and anthelmintic efficiency of drugs is a valuable one; full acknowledgement is made of the work of Caius and Mhaskar.

The use of various anthelmintics are considered in detail and this part of the book will be useful for purposes of reference. Most readers will turn to those drugs which are popular at the moment. It is suggested that carbon tetrachloride produces on the mucosa an anæsthetic protective action which limits absorption after doses of moderate size. The implication appears to be that small or divided doses must prove more dangerous than single doses of 3 to 4 c.cm. Evidence for this conclusion would be welcome. Commenting on the widely accepted explanation that poisoning attributed to this drug is really due to traces of carbon disulphide, the authors point out that this lacks laboratory evidence and that the dose of the carbon disulphide for a foal is 1 to 2 drachms. At the same time they accept the assumption that it is some sulphur compound which makes the drug toxic. The reservations which they advise in the administration of carbon tetrachloride entail a close personal examination of every patient. It is once more stated here that Schüffner and Vervoort advised oil of chenopodium in dosage of 3 c.cm.; reducing drops on the international dropper to cubic measurement, their dosage was really 1·2 c.cm. After noting that Ashford treated two million cases with thymol without a single fatality, the authors state that chenopodium and carbon tetrachloride are less dangerous than thymol for field work (though the records of neither approach in safety this cited example) and have largely supplanted thymol in the hands of most practitioners who have kept abreast of the times. We deprecate the implication that the

many authorities who favour treatment by thymol are old-fashioned. The chapters on antimony and emetine used mainly in schistosomiasis, are valuable.

The book as a whole is uneven, but since it reflects the views of men who have had considerable experience in the use of anthelmintics it will be studied with interest by those practising in the tropics.

SHORT ESSAYS ON MEDICAL TOPICS.

By C. O. HAWTHORNE, M.D. London: John Bale, Sons and Danielsson, Ltd. 1928. Pp. 246. 4*s*. 6*d*.

THIS little book contains some 50 essays, from which it will be gathered that many of them are not longer than the average leading article. Hence, as the subjects dealt with vary extremely, not only in theme but in importance, there are places in which the author is driven to being arbitrary, for he has allowed himself so little space in which to explain his views and no space at all for argument with those who might differ from him. But we do not think that many will want to differ, for the author, in discussing some of the most important professional topics, has dealt with them fairly, brought out the salient points, and delivered well-balanced judgments.

SECTION-CUTTING.

An Introduction to the Technique of Section-Cutting. Edited by FRANCES M. BALLANTYNE, M.A., Assistant in the Zoology Department, University of Glasgow. Edinburgh: E. and S. Livingstone. 1928. Pp. 80. 3*s*.

THIS little book has been compiled from the notes of the late Mr. Peter Jamieson, for many years assistant in the department of zoology in the University of Glasgow. It sets forth clearly and briefly the basal technique of section-cutting, and will no doubt find a place in the junior student's library. It is, however, quite elementary, and while, within its limits, its teaching is admirable, it contains little more than the student can learn from an hour's personal instruction and a little practice. If a medical student decides to be content with this manual in place of a more ambitious work he should disregard the statement on p. 49 that formalin as a fixative is only satisfactory for such objects as the eggs of frogs and newts.

KALA-AZAR.

A Handbook for Students and Practitioners. Second edition. By L. EVERARD NAPIER, M.R.C.S., L.R.C.P. Lond., in charge of Kala-Azar Research, Calcutta School of Tropical Medicine. London: Humphrey Milford, Oxford University Press. 1927. Pp. 203.

To those who practise in England kala-azar is merely of academic interest; but to the student of tropical medicine this disease is of paramount importance, for it is one of the dramatic infections of the tropics of which our knowledge has made rapid strides during recent years. Only some 16 years ago kala-azar was regarded as inevitably fatal; and now we learn it is possible to predict a cure in over 90 per cent. of cases. The second edition of Napier's Kala-Azar is thus opportune. Into its 200 pages a vast amount of information is compressed. Especially valuable is the account of the minute epidemiological investigations which led up to the modern conception of the transmission of the disease by *Phlebotomus argentipes*. These demonstrate clearly what can be accomplished by systematically applied observations in a limited area such as the town of Calcutta. The tropical practitioner will welcome a reasoned account of the treatment of kala-azar by the newer pentavalent compounds of antimony; he will, moreover, appreciate the numerous clear illustrations and graphs and the exhaustive bibliography.

ANAEROBES.

Données récentes sur les microbes anaérobies et leu rôle en pathologie. By W. WEINBERG an B. GINSBOURG. Paris: Masson et Cie. 192 Pp. 291. Fr.35.

Weinberg and his colleague have performed a grea service to bacteriologists in publishing this review the work on anaerobes published between 1918 an 1926. The review is accurate, comprehensive, an is informed throughout with the authors' profoun knowledge of the subject. The bibliography contai some 1400 references. If there is a fault it is tha certain organisms are included which may fail t stand the test of further investigation; but this better than omitting any which subsequently prove t be of importance. Bacteriologists will be grateful t the authors for such an excellent work of reference

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JOURNALS.

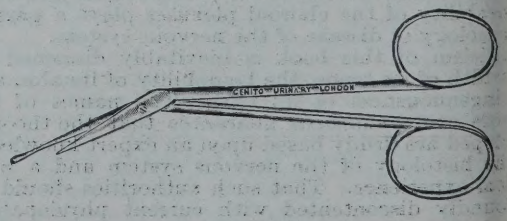
THE CRIPPLES' JOURNAL. Vol. V. No. 17. Jul 1928. 1*s*. 6*d*.—The publication of the April numb of this journal closed four years of work, and th present issue inaugurates the passing of the journ from being the official organ of the Central Counc for the Care of Cripples into an independent public tion run by its own advisory council and wit definitely international aspirations. This adviso council, presided over by Sir Robert Jones, will composed as follows: Dame Georgina Buller, Dan Agnes Hunt, Mrs. Townsend, Sir William Wheele Sir John Lynn Thomas, Rev. Ratcliffe Barnett, S William Lawrence, Bart., and Mr. A. H. Wood (Gre Britain), Mr. Edgar Allen and Dr. Robert Osgoo (America), Dr. Calvé (France), Dr. Murk Jans (Holland), Prof. Putti (Italy), Dr. Rummelh (Norway), and Dr. Biesalski (Germany). The poli of the journal will be towards promoting unity effort in bodies already dealing with one field social work or another in connexion with the interes of cripples, and it is intended to provide informati regarding all work in other countries bearing on th policy, and to print articles with the special obje of instructing voluntary workers in clinical and traini centres. Much stress will be laid upon the publishi of articles of an educational nature while, if t financial future of the journal allows, the price w remain at its present modest figure. We wish o contemporary all prosperity in its ambitio departure.

New Inventions.

PROBE-POINTED SCISSORS

FOR USE IN REMOVAL OF SALIVARY CALCULI.

IN removing calculi impacted in Wharton's du I have found the probe-pointed scissors here ill trated extremely useful. The probe is introduc into the duct as far as the stone, the scissors th lay open the duct, when the stone is usually extract without difficulty.



The instrument has been made for me by t Genito-Urinary Manufacturing Co., 28A, Devonshi street, W.1.

Birmingham. HAMILTON BAILEY, F.R.C.S. Eng

THE LANCET.

LONDON: SATURDAY, AUGUST 4, 1928.

EPIDEMIC CONSTITUTION.

FREIHERR VON PIRQUET'S discovery of the skin reaction to tuberculin not only enabled us to realise the universality of tuberculous infection, but has also proved to be the forerunner of a series of investigations of a similar character which have brought within the compass of one scientific theory most of the epidemiological phenomena exhibited by a large group of the acute communicable diseases. The Schick and Dick tests, although the significance of a positive result is different from that in Pirquet's reaction, have been equally fruitful in the genesis of ideas as to the prevalence of the infections of scarlatina and diphtheria, and these ideas have been found applicable to the epidemiological problems of other droplet-borne infections, such as poliomyelitis, meningococcal meningitis, and epidemic encephalitis. Prof. ULRICH FRIEDEMANN'S paper, published on page 211 of our present issue, is an admirable survey of the present state of knowledge in relation to the ætiology of some of these diseases and the extent of latent infection with the virus, whether known or still undetected, of some of these diseases among civilised communities. The essential truth now established is the extent to which the population is constantly immunised, presumably by subminimal doses of the virus, against diphtheria and scarlet fever, a process which Prof. FRIEDEMANN terms "latent epidemisation." The meaning of this phrase has been tersely explained by W. L. AYCOCK[1] in these words, "Of susceptible individuals exposed to measles 1 out of 1 develops the disease; to diphtheria 1 out of 10 develops the disease and 9 out of 10 develop subclinical immunity; to poliomyelitis 1 out of 100 develops the disease and 99 out of 100 develop subclinical immunity, or immunity from abortive attacks." Students of epidemiology will subscribe generally to this view without committing themselves to acceptance of the numerical proportions, and there can be no doubt that the way to this state of agreement has been paved by the American workers on the dermal reaction to diphtheritic and scarlatinal toxins. At the same time, it is only right to remember that ideas of this nature, nebulous perhaps, like many ideas born of clinical observation, found expression long before they were capable of experimental verification, in explanation, for instance, of such facts as the observed immunity of fever hospital residents and nurses without the affliction of previous manifest disease, the peculiarity in relation to scarlet fever and diphtheria contrasting markedly with the behaviour of unvaccinated members of the staff in contact with small-pox. Indeed, it may be said that clinical observations, field inquiries, and statistical surveys had already made the minds of epidemiologists receptive to the idea of "latent epidemisation" and "latent immunisation," although the theory had not actually been given its present acceptance and wide application.

Since FARR made a science of vital statistics English epidemiologists have continued to search for the laws of epidemics, and many of the proceedings of the Epidemiological Society, which is now merged in the Royal Society of Medicine, will repay study to-day. The periodicity of the different zymotics, their incubation periods, age-incidence, and variable case-mortality in relation to the apparent source of infection, the course and peculiarity of single epidemics, the predictability of their behaviour, were all explored for the clue which would lead to the discovery of one thing common to them all, the law which governed their coming and going. FARR brought the art of epidemic prophecy to a high state of accuracy, and satisfied himself by purely mathematical reasoning that there was more behind the decline of an epidemic than mere exhaustion of the number of susceptibles existing at its onset. In more recent years attempts have been made to account for the decline and recurrence of epidemics by variation of the infectivity of the virus, a theory not inherently improbable since changes in virulence are well recognised. Perhaps the most ingenious mathematical attempt to correlate the seasonal and other variations of the incidence of epidemic disease was the application of the periodogram to this type of problem by BROWNLEE.

Working alongside the statisticians—sometimes combining more than one function in a single person—were the bacteriologists and the practical sanitarians, both piling up observations which undermined the old conception of the epidemic without supplying enough material to provide entirely new foundations. The bacteriologist established the existence of chronic or intermittent carriers of infection; the practical investigator of epidemics was more impressed with the importance of mild, anomalous cases of disease. But it was really the field observations of J. A. GLOVER and S. F. DUDLEY, followed by the laboratory study of epidemics in mice by W. W. C. TOPLEY, which established the paramount importance of the population-medium—its constitution, its spacing, its internal movement, and the influx of new members—as controlling factors in the rise and fall of epidemics. Flagrant disease, anomalous disease, infection without disease, intermittent and chronic carrier states are now seen in their true importance and interrelation with one another, and the reactions of Schick and Dick are measures of their combined influence. Many things still remain to be explained, notably the tendency for diseases practically to disappear and then revive with apparent irregularity and with impressive suddenness, like influenza and poliomyelitis, in the absence of abnormal migration, or to occur apparently de novo as in the case of epidemic encephalitis. But we have a solid addition to the body of medical thought in this new theory of the epidemic, which justifies the best part of the established measures for control of the communicable diseases, while revealing the reasons why these in themselves have proved insufficient to abolish the endemic zymotics from civilised communities. The criteria of communicability, too, have been extended, and we can no longer assume that diseases like rheumatism are non-communicable merely because case-to-case associations are untraceable. Further, we have been armed with a new specific preventive in the form of toxin or toxin-antitoxin inoculation, the value and limitations of which are well stated in Prof. FRIEDEMANN'S paper.

[1] Amer. Jour. of Hygiene, January, 1928, p. 35.

THE VACCINATION REPORT.

EARLY this week appeared the Report of the Committee on Vaccination appointed two and a half years ago by the Minister of Health in conjunction with the Medical Research Council. It was a Committee of seven with Sir Humphry Rolleston as chairman,

Dr. J. R. Hutchinson as secretary, and Dr. F. R. Blaxall, Dr. G. F. Buchan, Dr. A. E. Cope, Dr. Mervyn Gordon, Prof. J. C. G. Ledingham, and Dr. J. R. Perdrau as members. The Committee was asked to inquire and report: (1) on matters relating to the preparation, testing, and standardisation of vaccine lymph; (2) on the practical methods which are available in the light of modern knowledge to diminish or remove any risks which may result from vaccination; and (3) on the methods of vaccination which are most appropriate to give protection against risk of small-pox infection in epidemic and non-epidemic periods. The Committee was at the same time given liberty to coördinate the work of investigation on these questions in this country and abroad. The Report is divided into two parts, of which the first deals with each reference in turn, and the second exclusively with the consideration of the nervous conditions which occasionally follow vaccination. A series of appendices complete a volume[1] of 324 pages, which is admirable alike in its lucidity and restraint.

The Committee's reference has given rise to an account of the methods of lymph production in general and especially those employed by the Government Lymph Establishment. The preparation of the vaccine is of peculiar interest, for, with the exception of the original Pasteur method of treatment of hydrophobia, small-pox vaccination is to-day the sole established instance of the use of a living virus as an immunising agent. Although strains of vaccine lymph of diverse origin are used, the vaccination process throughout the world is remarkably constant in character and uniform in feature, and agreement has been reached as to the methods of testing the potency of lymph and as to the minimum standard of potency which can be sanctioned. These tests and standards are now laid down in the Regulations under the Therapeutic Substances Act, and they give, in the Committee's opinion, the desired assurance that the preparation of vaccine lymph is being carried out on approved lines as regards minimal potency and comparative absence of associated micro-organisms. Government lymph, it is interesting to note, is not issued until about two years from the date of its collection, when, owing to the combined action of the glycerine and oil of cloves the extraneous organisms it contains are eliminated or reduced to 5 or less per mg. There is still, unfortunately, a great lack of information as to the minimal dose of lymph necessary to secure adequate immunity from small-pox, and this is a problem awaiting solution by experimental means. Singular promise lies in an observation recently made at the Lister Institute, where vaccine virus, in contact with chick embryo cells, has been found to increase in potency one-thousand fold. Otherwise there is a general consensus that different strains have similar immunising powers. Vaccination in this country has hitherto aimed at securing in infancy the longest possible duration of immunity and at postponing the time when revaccination should become necessary, whereas the American and Canadian practice is to popularise vaccination by rendering it as little incommoding as possible, with the hope that a second or even a third vaccination will not merely be tolerated, but even sought. The Committee now definitely recommends that, in place of the officially advocated four insertions, a trial should be made of vaccination and revaccination in one insertion with a minimum of trauma, and deprecates multiple scarification or cross-hatching. The optional age for vaccination on these lines is regarded as months, and the offer of revaccination might advantage be made when the child enters schoo 5–7 years, and again on leaving it at 14–16 ye Multiple insertion would still be available for s persons as desire to obtain the maximum protec at one stage. Vaccinators are advised to ins twice after vaccination, the second time betw the fourteenth and seventeenth days, and to m it clear to parents that such medical attention is required is obtainable without cost. The sylla of instruction to medical students should, the C mittee feels, be revised in the light of present- knowledge.

The risks of vaccination have markedly diminis since the Act of 1898 came into force, and in so as the risk is from sepsis it is likely to dimi further to a vanishing point. But the second of the Report is, as we have said, given up enti to the risk from disease of the central ner system following vaccination, and there m appear to be a certain want of proportion in devo more than 100 pages to this subject, were it not for fact that the occurrence of post-vaccinal ner disease, however seldom of occurrence, cannot to have a bad effect on vaccination both in its ad istrative and in its medical aspects. Happily Committee is able to point out the extreme ra of such manifestations. During a period of years (1922–27), in which 3 million charges of ly were issued by the Government station, and estimated number of vaccinations performed in country was over 4½ million, 51 deaths were reco from this cause. Particularly rare is nervous comp tion after revaccination and after primary vaccina in early infancy, and on this ground, if on no o early infancy remains the time of choice for pri vaccination. Here is incorporated, at length, report of the committee appointed in 1923, u the chairmanship of Sir Frederick Andrewes, w now sees the light in this country for the first t Although the non-appearance of the Andr Report may have occasioned undue anxiety in quarters, justification of the delay lies in the rea ing commentary which now appears in the ligh further knowledge. The Rolleston Committee u mously acquits vaccinia virus of being the cause of nervous sequelæ, although it ca exonerate vaccination from playing some pa their causation. It is its considered opinion tha coöperation of vaccinia with the viruses of p myelitis or of encephalitis lethargica, or pos some unknown neurotropic virus harboured vaccinee, must for the present be retained working hypothesis of causation. It is hoped the publicity now given to this complication result in an accumulation of clinical and epid logical data which may help along with experim research to solve a problem of great importan quality if not in quantity.

The final recommendation is to the effect that be taken to impress upon the public mind the n and purpose of vaccination. The Commi Report will afford the medical profession fo first time a body of accurate and unbiased inf tion to be used for this purpose, and we believe good prospect of success.

[1] Ministry of Health. Report of the Committee on Vaccination. Cmd. 3148. H.M. Stationery Office. 1928. 7s.

ANTHROPOLOGY AND PARASITES.

THE nasty grey squirrel which came from America and escaped from the Zoo some years to spread all over England, as far north as York

ıd at least to the Cotswolds in the west, carries with everywhere its own special flea; anyone knowdgeable in such matters (whether he should be called pulicophile or a siphonapterologist we do not know) ho picked up a dead *Ceratophyllus wickhami* in the ad would be sure that *Sciurus cinereus* was not far f. And this is the general truth about parasites; ch species is adscript to one or at most two or three sts, and very few are so little particular in their abitats that they range indifferently over a large mber. When the hosts travel they take their rasites with them. It is very unlikely, for instance, at the great plague vector *Xenopsylla cheopis* is tocthonous in England; it lives, or used to live, the rats in the Borough because it had come with host from the tropics. Similarly, the provenance the labourers on the coffee plantations in Brazil n be predicted by finding out whether their preminant hookworm is *Ankylostoma duodenale* or *ecator americanus*. This segregation and isolation of rasites in particular hosts naturally encourages eciation—i.e., separation into distinguishable forms and their occurrence may give us some information th as to where the host has been quite lately and to where and what the hosts' ancestors have been the remote past. The specific differentiation of man lice as they occur now is dubious and uncertain; is supposed that they are largely mixed hybrids some definite species which used to occur isolated the primary human races, and which have become ixed by human migrations and intercourse.

In one way and another, therefore, parasites may row light on a good many general questions, and in e last number of the *Quarterly Review of Biology* ol. iii., p. 225) the possible evolutionary significance the protozoan parasites of monkeys and man is scussed in an interesting way by Prof. ROBERT EGNER, of the Johns Hopkins School of Hygiene. e recognises six amœbæ, seven flagellates, one ccidium, and one ciliate as being genuinely parasitic the human intestine, of which *Entamœba histolytica*, *ospora hominis*, and *Balantidium coli* are definitely athogenic; in the blood we have three malarial rasites, three trypanosomes, and three *Leishmania*. he protozoa of monkeys are naturally not nearly well known, and it is obvious that observations on imals living in captivity in close association with an are not of much significance. The monkey nœba *E. nuttali* is as like the human *histolytica* as can be, nor can their harmless *E. coli* be distinished from those found in man. And with the ception of the *Leishmania* the same correspondence found in the other groups; 11 out of 15 of the man genera, and two-thirds of the human species ave been described from monkeys, though the alarial parasites of monkeys would be better scribed as very similar to, rather than identical ith, that of man. The facts are interesting; their terpretation is difficult, for such a situation may ave arisen because man has a genetic relationship ith monkeys or because he provides in his bowels, s blood, and his economy in general, a similar series habitats. On either hypothesis human parasites ould be more like those of monkeys than those of ats or cows, and there seems to be nothing in the rgument which would convince a determined fundaentalist of error. On the whole, the genetic lationships of hosts and parasites are not very close, nd if the occurrence of monkey parasites in man dicates the line of human descent, what significance re we to attach to the discovery of *Balantidium coli* pigs and guinea-pigs or to the fact that the other atural host of *Pulex irritans* is the badger?

Annotations.

"Ne quid nimis."

THE BUNDABERG REPORT: FATAL STAPHYLOCOCCAL INFECTION.

THE report of the Royal Commission on the Queensland serum tragedy of last January [1] has now been tabled in the Federal Parliament. The findings of the Commission are these:—

The Findings.—1. The injections of toxin-antitoxin mixture administered by Dr. Thomson at Bundaberg on Jan. 27th, 1928, were responsible for the deaths of 12 out of 21 children inoculated, and for the illness of several who survived.

2. The toxin-antitoxin mixture as issued by the Commonwealth serum laboratories was properly prepared and sterile, but contained no antiseptic, and, therefore, did not prevent the growth of micro-organisms accidentally introduced into it.

3. The rubber-capped bottle of toxin-antitoxin supplied to Dr. Thomson at Bundaberg was accompanied by no information as to the presence or absence of antiseptic.

4. The omission of antiseptic was intended to safeguard against the dangers attendant upon freezing, but the issue of this preparation without antiseptic in rubber-capped bottles suitable for repeated usage is an unsound procedure.

5. The toxin-antitoxin mixture in the bottle used by Dr. Thomson was contaminated by him with a pathogenic staphylococcus during a series of inoculations on Jan. 17th, 20th, 21st, and 24th, most probably on the last occasion.

6. The consideration of all the available evidence concerning the deaths at Bundaberg points to the injection of living staphylococci as the cause of the fatalities.

As a result of much experimental work and a critical review of the evidence, the Commission was led to make certain definite recommendations with a view to avoidance of similar tragedies in the future.

The Recommendations.—1. That biological products in which the growth of pathogenic organisms is possible should not be issued in rubber-capped containers for repeated use unless there is present in the material a sufficient concentration of antiseptic to inhibit bacterial growth.

2. That all biological products not containing antiseptic, however issued, should bear a conspicuous printed notice, both on the container and on the package, to the effect that no antiseptic is present; that they should be used immediately on opening, and any remaining product discarded.

3. That biological products should be distributed in bottles or ampoules of clear glass in which it is easier for the medical practitioner himself to detect turbidity or any other defect.

4. That the Commonwealth Department of Health should make full and careful inquiry as to whether it be advisable to substitute anatoxin or some similarly modified immunising agent for toxin-antitoxin.

5. To ensure the adoption of the most approved technique, facilities for special post-graduate training should be afforded to all medical officers entrusted with the conduct of public campaigns to diminish the incidence of disease by immunisation.

Poisoning by diphtheria toxin, it will be noted, is excluded on adequate grounds. The clinical picture in the fatal cases was not that of fatal diphtheritic toxæmia; at the autopsy the suprarenal glands were found to be normal, and the children who recovered did not show any of the characteristic sequelæ of diphtheria. No free toxin was found in the prophylactic remaining in the fatal bottle nor in many duplicate bottles taken from the batch of prophylactic incriminated. The possibility of tetanus was carefully considered and rejected. The evidence for staphylococcal infection was that the remaining fluid in the bottle used was noted as cloudy on the day after the injections, that the contamination had "almost certainly" occurred three days before the fatal injections were given, and that the remaining fluid in the bottle yielded a pure culture of staphylococcus. Of the 21 children injected 12 died; in all 9 survivors, of whom 6 were ill, abscesses developed at the site of injection, and from 5 of these abscesses a staphylococcus apparently identical with that in the fatal

[1] THE LANCET, 1928, i., 249, 1293.

bottle was recovered in pure culture. The estimate is that five million cocci, together with their products of growth, were injected into the children. The children began to suffer within six to eight hours from vomiting, diarrhœa, fever, early unconsciousness, retention of urine, and, in the younger ones, convulsions, death occurring within 24 hours in several instances. With two doubtful exceptions no metastatic staphylococcal abscesses developed in any of the survivors. The coccus isolated did not seem to possess any unusual cultural or fermentative properties and closely resembled varieties of *Staphylococcus aureus*, though it produced "a buff coloured" and not "a typically orange" deposit. An antiserum to the coccus agglutinated aureus strains typically. Apparently neither culture nor filtrate produced in laboratory animals, including *Macacus rhesus*, a picture resembling that seen in the children, though small doses given intravenously to rabbits killed in 12 to 24 hours with convulsions. Evidently higher monkeys were not available for injection. The Commissioners very fairly state that their findings are based on evidence that is suggestive rather than conclusive, that unfortunately defects in the clinical study of the cases and lack of specialised bacteriological and pathological examination of the children who died left serious gaps in the evidence, and that "short of the unthinkable experiment of injecting the living staphylococci into children, it is not possible to offer rigid proof . . . for there is not within our knowledge any previous experience of the subcutaneous injection of large numbers of living staphylococci into young children." Bacteriologists, we think, will agree that the Commission could not do otherwise than conclude that the contaminating staphylococcus and its toxins caused the deaths, and that the tragedy would have been avoided had the prophylactic contained sufficient antiseptic, a practice which is probably universal in England, America, and the Continent. So far as we can find, there are on the English market no prophylactic preparations without adequate antiseptic. On such points the Therapeutic Substances Act provides for any control considered necessary.

Two other points in the report merit attention. The Commission recommend inquiry directed towards the replacement of toxin-antitoxin mixtures by toxoid or anatoxin. No reasons for this recommendation are given in the text of the report available at the time of writing. The needles used in immunising the children had apparently been kept in methylated spirit. The phrase "sterilised in methylated spirit" occurs in the report. It is well known, and has been emphasised by T. J. Mackie[2] in a recent important review of the preparation of catgut, that methylated spirit possesses a restricted bactericidal power and that it cannot be relied upon to sterilise surgical apparatus if resistant or spore-bearing microbes are in question.

THE TRAFFIC IN NARCOTIC DRUGS.

In accordance with a precedent initiated last year, the annual report of the British Government to the League of Nations (1927) on the traffic in opium and other dangerous drugs, has been communicated to the press. It deals with the administration of the Dangerous Drugs Acts, 1920 and 1923, in Great Britain, and furnishes abundant statistical information as to the manufacture in this country of morphine and heroin and their salts, and as to the import and export of opium and its alkaloids, and of cocaine during 1927. Reference is made to the extent of the international illicit traffic alluded to in THE LANCET of July 21st (p. 133). While several seizures of drugs were made at English ports on ships of British nationality, it is satisfactory to learn that no information had been received that any firm in Great Britain had been engaged in smuggling drugs abroad, nor have any seizures of drugs of British manufacture been reported during the year. It may be w worthy of consideration whether, if all members the League of Nations and States parties to T Hague Opium Convention of 1912 had passed—a enforced—legislation like the Dangerous Drugs A 1920 and 1923, which gave effect to that Conventi the international situation in regard to the comme in narcotic drugs would not be more satisfact than it is. The amount of British morphine ma factured and exported continues to fall. While a f years ago some 14 tons were in one year exported, 1927 the amount was 66,107 oz. The figures heroin are less satisfactory, 17,427 oz. having b manufactured against 11,113 oz. in 1926; 11,165 were exported against 6799 oz. in 1926; 4673 oz. w consigned to France, a considerable increase on t amount for 1926. Of 107,042 lb. of raw opi arriving through the approved ports of Lond Liverpool, and Southampton, no less than 86,080 came from India, and only 19,888 lb. from Turk As the morphine content of the Indian drug was 10 per cent., against 11·12 per cent. in the Turkish, t old prejudice against the pharmaceutical use of t Indian variety, by reason of its alleged poverty in t alkaloid, appears to have been ill-founded. Hithe there has been no production of cocaine from t leaves, or by refining crude cocaine, in Great Brita but in 1927 a licence was granted to Messrs. May a Baker, Ltd., of Wandsworth, to carry on experime in such manufacture. The licence precludes t marketing of such produce without the spec sanction of the Home Office.

Two important seizures of cocaine have been ma in London this year, one of Japanese manufact smuggled in by a Lascar on a vessel from the F East; the other of German manufacture exported Lithuania and thence smuggled in by a Lithuani resident in London. There were 60 prosecuti under the Dangerous Drugs Act in 1927; 45 pers were convicted and fined, or imprisoned, or de with under the Probation of Offenders Act, wh five were recommended for deportation. It appe that a considerable amount of morphine (65,746 o was used in 1927 for the manufacture of codeine. T alkaloid is not scheduled as a dangerous drug, althou in the first draft of The Hague Convention it w included. The question of applying to it the p visions relating to morphine and heroin has engag the attention of the Opium Advisory Committee Geneva.

ACUTE EMPYEMA.

In a recent article on the treatment of acu empyema, Dr. Antoine Basset maintains[1] that th is no longer any uniformity of method in de ing with this condition, nor is there any soun established doctrine to guide the practitioner wh faced with this emergency. Prior to the epide of influenza in 1918, the treatment of empye was similar to that of any other collection pus—viz., immediate evacuation and draina To render these more effective, costal resection w usually practised. The customary method w adopted for the treatment of empyema complicati broncho-pneumonia during the earlier months the pandemic, but the results were profoundly d appointing. In certain of the American milita camps the post-operative mortality is said to ha reached the figure of 84 per cent. As a consequen less drastic methods were advocated; aspirati with irrigation of Dakin's or Murphy's soluti replaced the classical operation of costal resecti and open drainage. The advantages to be deriv from conservative treatment, at least as a tempora measure, were discussed at the Twenty-third Congr of the French Surgical Association in 1920, and t matter has been debated ever since. Dr. Bass advises postponement of operation when empye complicates acute pulmonary disease; in such cas

[2] An Inquiry into Post-Operative Tetanus. A Report to the Scottish Board of Health. See THE LANCET, 1928, i., 1187.

[1] Traitement des pleurésies purulentes aiguës de la gra cavité, Arch. med.-chir. de l'appareil resp., December, 1927

considers it advisable to wait until the pneumonic process shows signs of retrogression. Meanwhile the patient may be relieved by aspiration of pus and supported by medical treatment, including vaccine and serum therapy. When operation is decided on, local anæsthetic should be used and as a rule the most effective drainage will be secured by resecting 4 or 5 cm. of the tenth rib in the posterior axillary line. Pneumococcal empyema in children is often a relatively benign infection, and for these cases repeated aspirations may suffice. They are certainly to be preferred during the acute pneumonic stage. Rib resection should also be avoided in early childhood—i.e., before the age of 18 months. But there is an exception to the statement that in the presence of an acutely diseased lung preliminary treatment by aspiration is the method of choice. A putrid empyema, or one associated with gangrene, should be freely drained at the earliest possible moment whatever the condition of the subjacent lung. Dr. Basset lays stress on the importance of a careful cleaning of the empyema cavity by gauze swabs at the time of operation. Neglect of this precaution may lead to blocked tubes and ineffective drainage. Short wide tubes should be used and the employment of a Tiegel's valve will permit free exit of pus while preventing the entrance of air during inspiration. A simpler method of obtaining the same end is, of course, to connect the drainage-tube with a reservoir containing antiseptic solution.

INTESTINAL BACTERIA IN PERNICIOUS ANÆMIA.

It is rather more than 20 years since Dr. C. H. Carter pointed out that *Bacillus welchii* was abnormally abundant in the fæces of cases of pernicious anæmia, and rather before that time Dr. William Hunter began to urge the ætiological importance of gastric and intestinal streptococci. Both organisms are hæmolytic in the sense that they can produce intracellular toxins which are capable of dissolving red corpuscles both in vitro and in the body of experimental animals. The capacity of *B. welchii* in this respect is especially powerful, and Dr. H. G. M. Penry and others have worked out the conditions under which its hæmotoxin is produced, how it acts in the body, and how it stimulates the production of an antitoxin. That the chronic anæmia of pernicious anæmia is directly due to any such antigenic hæmolysin is on general grounds very unlikely; the body would become actively immune, and if it did not it should be easy enough to make it passively immune by injecting *welchii* antitoxin; this has no effect on the course of the disease. But if *B. welchii* and streptococci do not cause the disease directly by their hæmolysins, it does not follow that they play no rôle in its pathogenesis. The absence of acid from the stomach is a grave abnormality and is obviously likely to upset the bacteriology of the alimentary tract, at any rate in its upper part. An abnormal abundance of organisms has been described by a number of observers, and the whole subject is reviewed in a comprehensive way in the current number of the *Journal of Pathology and Bacteriology*, by Dr. Stanley Davidson, of Edinburgh, who has elaborately studied 41 cases of pernicious anæmia along with normal controls and examples of other diseases, examining the fæces and the gastric and duodenal contents; these two last cannot, he says, be separated, since the patulous pylorus of pernicious anæmia leaves the stomach and duodenum in free communication. His results are, briefly, that in pernicious anæmia there is a great numerical increase in *B. coli*, streptococci, and *B. welchii*, both in the stomach and in the stools. These microbes are normal inhabitants of the human alimentary tract, and a careful investigation of their varieties failed to show any qualitative difference between those found in healthy persons and those from pernicious anæmia. He concludes that there is no evidence that any individual type of organism is specifically related to pernicious anæmia. At the same time, he attributes great ætiological importance to the quantitative increase of bacteria, especially at levels in the small intestine which in normal persons are relatively free from bacteria. It may be supposed that these act by producing, directly or indirectly, substances which, passing by the portal circulation, impede the action of the liver. The gastro-duodenal sepsis runs parallel with the achlorhydria, and both continue unaltered after cure by liver. On this view pernicious anæmia is a pathological but not an ætiological entity. The changes described in the flora of the alimentary tract are not quite invariably present, and other factors may less commonly play an important part. Dr. Davidson mentions a hereditary or constitutional element in the disease, but the evidence for this is rather nebulous.

MEDICAL HISTORY STATEMENTS.

A RECENT paragraph in the *Solicitors Journal* draws attention to some observations of the county court judge at Birmingham upon the practice of medical witnesses. In workmen's compensation and other cases it is often necessary that the medical practitioner should ascertain the patient's medical history before diagnosis. But the statement which the patient gives may be closely connected with the very facts which are in dispute. In the Birmingham case apparently the plaintiff's representative suggested that the medical witness had exceeded his professional duties in obtaining such a statement. On the other hand, on behalf of the defendant it was stated that the statement was obtained by the medical witness in the presence of the patient's own doctor and was written down in the presence of both. His honour Judge Ruegg, K.C., observed that nothing unusual had been done, but that it was becoming a habit with doctors to take particulars of this kind, and then to come into court and give evidence of the contents of the statement. Upon this position two comments seem proper. In the first place it is always the duty of a medical witness to distinguish between facts which are within his own direct knowledge and matters of which he has merely been told. This distinction is notoriously of great significance in the process of certifying a patient under the Lunacy Act. The second comment is that which the county court judge himself made. He thought it objectionable that doctors should obtain statements in the way mentioned, because, if a patient knew that statements were to be obtained in that way, he would hesitate to go to a doctor. Subject to these two comments it is clear that a medical witness's evidence may be useless, unless he has been made aware of the patient's medical history, and the witness is entitled to state how far the patient's condition is consistent with, or could be explained by, that history. It does not appear that an experienced county court judge could ever be misled by medical evidence properly so obtained and tendered.

SCHOOL MEDICAL OFFICERS AND THE NOTIFICATION OF MENTAL DEFECT.

THE passing of the Mental Deficiency Act, 1927, has made it necessary for the Board of Education to revise their regulations governing the notification of children and the draft of the new regulations has recently been published. These will come into force on Oct. 1st, 1928. They are decidedly shorter and simpler than the old ones, and in addition to containing certain minor alterations consequent on the changes in the Act, they make an alteration which should be welcome to local education authorities and their medical officers. The Act requires, in the case of defective children of 7 years and upwards, who are incapable by reason of mental defect of receiving benefit or further benefit in special schools or classes, or who cannot be instructed in a special school or class without detriment to the interests of the other children, that their names and addresses shall be notified by the local

education authority to the local mental deficiency authority, who will then be responsible for them. Under the old regulations, if the child whom it was proposed to notify was not an idiot, imbecile, or moral imbecile, the Board of Education required that their sanction should be obtained before such notification was made. Under the new regulation this has been waived, and cases in future can be notified on the certificate of the school medical officer without reference to the Board. There is a provision that in the case of the local education authority being in doubt regarding any child so certified, they may refer the matter to the Board before discharging their statutory duty of notification, and such reference to the Board is compulsory in the case of blind or deaf children coming under Section 69 of the Education Act, 1921. It may happen that a child is certified by the medical officer as not being incapable of receiving benefit from instruction in a special class or school, but is nevertheless considered to be in need of supervision, guardianship, or institutional care. In this event the case is to be referred to the Board, and if the Board certify that there are special circumstances which render it desirable for the child to be dealt with in this way, it then becomes the duty of the local education authority to notify the case to the local mental deficiency authority. In the case of children about to be discharged from special schools on or before attaining the age of 16 years, the local education authority may still, as previously, decide as to whether notification should be made without reference to the Board. We think that the alterations which have been made will tend to simplify administration, and they are doubtless inspired by an increased confidence on the part of the Board in the efficiency of school medical officers and local education authorities.

PHARMACY AND BIOCHEMICAL DISCOVERY.

ADDRESSING the British Pharmaceutical Conference at Cheltenham on July 24th, the chairman, Mr. R. R. Bennett, B.Sc., F.I.C., selected certain aspects of biochemistry of importance to those engaged in the practice of pharmacy, dealing in succession with the practical applications of the study of hormones and vitamins. More than ever before the pharmacist, he said, is dealing with remedies which can only be assayed and standardised by biological methods, a fact which was bringing into prominence the increasing work carried out at the Pharmaceutical Society's pharmacological laboratories. The General Medical Council had been criticised for its failure to introduce biological methods of standardisation into the current British Pharmacopœia, but, said Mr. Bennett, the Council should not be blamed for that; at the date of its issue the Council could not have prescribed biological tests as there were no official standards for such tests, nor had the Council then any power to enforce such standards in the absence of a laboratory where tests could be made. It was only the coming into force in August, 1927, of the Therapeutic Substances Act of 1925 which had brought into being a Joint Committee charged with the duty of prescribing standards, tests, and units of standardisation for therapeutic substances, the purity and potency of which could not be adequately tested by chemical means. Standards had now been defined for a number of such substances, laboratories had been appointed to prepare and keep the standards, and machinery for controlling their application had been created. The Pharmacopœia Commission which would soon come into existence would, he said, accordingly be able to include in the next edition of the Pharmacopœia any therapeutic substance for which a standard of reference had been defined by the Joint Committee, and to introduce a biological method for standardising any substance for which a standard had been set up. Mr. Bennett congratulated the Pharmaceutical Society on its readiness to adapt itself to these fundamental changes, and concluded with the remark that the future of pharmacy will depend upon the continued cultivation of the scientific habit of mind and upon the power of c fronting new conditions and new difficulties w systematic knowledge and perfected technique.

ETHYL PETROL.

THE internal combustion engine has its marl likes and dislikes, and, last autumn, the first c signment reached this country of a kind of fuel wh had been found in America to abolish a tiresc form of engine trouble; but this ethyl gasoline, a was called, contained a small proportion of l tetra-ethyl in the manufacture of which distress cases of lead poisoning were known to have occur The question arose whether the consumer mi not also run some risk from its use, and a discuss in the House of Lords last February elicited statements that Sir William Pope regarded l tetra-ethyl as a poison likely to be absorbed thro skin abrasions and by the lungs, and that P H. B. Baker believed it might reach the body thro the unabraded skin. As a result of this discuss the Minister of Health agreed to appoint a Dep mental Committee to inquire into the possible dan to health resulting from the use of motor spirit this kind. This Committee,[1] which included tinguished chemists, toxicologists, and med administrators, has now issued an interim repo the message of which may be stated at once to " there is no evidence to show that the use of et petrol as a motor fuel involves more dangers to hea than the use of ordinary petrol." This favoura report was not unexpected in view of such evide as is presented in the report[3] by Dr. Alice Hamilt of Boston, to the International Labour Office. Fr this report it was already clear that scrupulous has practically eliminated risk from the manufact of tetra-ethyl lead and also from the process blending it with petrol. Moreover, the workers employed can be carefully supervised and f protected. In regard to the chauffeur and the gar man who fills petrol into cars, a committee of exp issued in 1926 a considered report based on expi mental work. No definite signs of lead absorpt were detected after exposures of two years, and good grounds were found for prohibiting the use ethyl petrol as a motor fuel, provided that its dis bution and use were controlled by regulati Evidence, however, was forthcoming that, q apart from the use of lead in petrol, lead dust d accumulate wherever motors are garaged, and t whether it originates from paint, from rubber, or fr accumulators the risk of poisoning seems compar to that which might arise from ethyl petrol. risk from lead, however, is regarded as definitely than that from carbon monoxide, which nowad necessitates free ventilation of garages and mo sheds.

The Departmental Committee's report bri Dr. Hamilton's monograph up to date and cont the evidence of Dr. J. P. Leake, of the United St Public Health Service, who assured the Commi that although careful search had been made possible injury to health from the use of ethyl pet no instance of injury had come to light. It is t that there is no compulsory notification of indust lead poisoning in the U.S.A., but Dr. Leake's inq extended over private sources, press-cutting bure and the health authorities of each separate St and in view of the publicity which has been dr to this fuel it is hardly likely that any cases of poiso should have escaped notice. In regard to the

[1] The members of the Departmental Committee appointe April 2nd, 1928, are Sir Frederick Willis (Chairman); Mr. Bridge, F.R.C.S.E.; Sir George Buchanan, M.D.; Mr Chaston Chapman, F.R.S.; Prof. W. E. Dixon, F.R.S.; M W. R. Galwey, M.B.; Mr. C. H. Lander, D.Sc.; Sir Ch Martin, F.R.S.; Mr. D. R. Pye; Sir Robert Robertson, F.R Sir William Willcox, M.D.; with Mr. S. F. S. Hearder (Secret

[2] Interim Report of the Departmental Committee on E Petrol. Cmd. 3159. H.M. Stationery Office. 1928. 4d.

[3] Revised by the Correspondence Committee on Indus Hygiene and published as Brochure No. 87 of the encyclop entitled "Occupation and Health." Geneva, 1928.

o inhaling lead from ethyl petrol, Sir Robert Pbertson was able to assure the Committee that the fi t half of petrol evaporated from the mixture is e irely free from lead tetra-ethyl. The risk to h lth from spillage, although unproved, is regarded a a possibility not to be ruled out, and is to be the s ject of further experiment. Absorption through t skin may not be as important as was supposed, f it has been shown that a monkey may be anointed 70 times with ethyl petrol, at intervals of about a d y, without more than the merest trace of lead b ng found in its tissues after death. The Com- m ttee has been especially impressed by the reassuring f t that garage workers in the U.S.A. who have been h dling ethyl petrol continuously for four to five y rs show no signs of lead poisoning. Although s isfied on this point the Committee emphasises the v rning that ethyl petrol should be used only as a m tor fuel and not for such purposes as cooking or c aning. Sales in this country are, in fact, governed b regulations which require the dyeing of the s bstance red as an additional check against its use o herwise than as motor fuel, the labelling of cans and p mps, and the issue of notices to the public. The Departmental Committee has thus reported definitely o the main point at issue, although, as has been s d, further investigations are to be made on certain p nts. In the meantime, the city of New York h s just rescinded its prohibition on the sale of ethyl p rol within its borders.

THE M.A.B. ANNUAL REPORT.

THE Metropolitan Asylums Board has just published i annual report [1] for the year 1927–28, being the t rtieth year of issue. It is the familiar orange p per-covered volume of 350 pages, containing first a account in 75 pages of the Board's multifarious a tivities intended for the enlightenment of the p blic, then a number of elaborate financial and other t bles, and, thirdly, a series of monographs on one a ject or another of the clinical work done under the a spices of the Board. For those who have the i genuity and patience to find their way about this r port, it is a veritable mine of information. There m y still be readers who need to be reminded of the e ormous scope of the Board's activities, dealing a it does with the reception and care of various c sses of sick and infirm from all the unions and p rishes in London. The number of occupied beds i the various institutions of the Board on the last d y of the year under review was 20,746, and the t tal accommodation includes 8444 beds for fevers (i cluding 60 for ophthalmia neonatorum and 52 f r venereal diseases), 2168 beds for tuberculosis, 2 06 beds in children's institutions, 9387 beds in mental h spitals (not including 355 for sane epileptics), a d, finally, 734 beds in the training ship *Exmouth*, a d 828 beds in casualty wards for the poor. The t tal annual expenditure was round about £2,350,000, a otted to the four main groups—feeble-minded, f vers, tuberculosis, and children—in the proportions r ughly of 63 : 96 : 26 : 25. During the year the f ver accommodation has been revised and reallotted t conform with the standard laid down by the M nister of Health—viz., 1872 cubic feet, 144 square f et, and 12 linear feet per bed, without substantial d minution in the number of beds. In these hospitals a salutory change of policy resulted in the allocation o 1581 beds to measles at the beginning of April 1st. Although the daily average for diphtheria d ring the six winter months was as high as 2483, n t many scarlet fever patients were displaced, owing t the use of the Joyce Green Hospital at Dartford a a safety-valve. The concentration of cases of p erperal fever in two of the infectious hospitals, o e on either side of the river, has facilitated a research b Mr. J. M. Wyatt, the obstetric consultant, into t e method of infection in puerperal women ; in each case, when a patient is sent in, a swab is taken by the accoucheur from the throat of the nurse or midwife in attendance on the woman. At the Western Hospital a small number of beds has been allocated, as before, to cases of poliomyelitis in the acute stage, under the supervision of Mr. George Perkins. At the North-Western Hospital a clinic was opened last June for the treatment by radium of cancer of the uterus under the supervision of Mr. Comyns Berkeley ; the allotment of eight beds will suffice for the full use of two sets of radium applicators. The experiment of assembling cases of encephalitis lethargica at the Northern Convalescent Hospital, Winchmore Hill, has been continued, admission of extra-metropolitan cases having been sanctioned in order fully to utilise the allotted beds. This experimental unit, as Dr. G. A. Borthwick frankly admits, has not been productive of curative results, although it has proved valuable as an observation station, and on this ground the Board has approved its continuance. Artificial sunlight treatment has now been installed at four hospitals, two on each side of the Thames. Long Reach Hospital being under reconstruction, in May last cases of small-pox overflowed from the temporary accommodation loaned by the Willesden U.D.C. at Kingsbury, into the large reserve hospital at Joyce Green. The type of small-pox case in London now approximates closely to that which has prevailed for several years in the northern counties. In the first half of the present year 172 cases were admitted from 17 different metropolitan boroughs. During the year 437 students (of whom 79 were women) attended courses of instruction at the Board's fever hospitals. At the mental hospitals a revised dietary came into force in June, admitting of the use of fresh fruit, when obtainable, on two days a week, while a canteen for the use of patients has been established at Darenth Training Colony. A difficult situation is arising from the steady increase in the number of young able-bodied men seeking admission to casualty wards, and the Board proposes to reinstate the breaking of stone by hand as a deterrent task. No more has here been attempted than a brief outline of the Board's activities ; we shall have occasion to return to some of the clinical reports.

[1] From the Office of the Board, Victoria Embankment, ondon, E.C. 5*s*. The medical portion of the volume is tainable in four separate sections, price 1*s*. each.

CONTRIBUTORS to the Ferrier Memorial Fund met on July 18th under the chairmanship of Sir Charles Sherrington, and resolved to invite the Royal Society to accept the sum of £1000 in trust to found a David Ferrier Memorial Lecture. The balance of the fund will be applied as seems most suitable when the total contributions are known. The Fund is to be closed on Sept. 30th.

EPSOM COLLEGE—Founders' Day was observed at Epsom College on Saturday last, July 28th, when the celebration included service in chapel, distribution of prizes, and a garden party on the College playing-fields, where many parents and supporters of the College were spectators of a well fought-out cricket match between the College and the old boys. After service in chapel, and a luncheon-party at which the Council of the College acted as hosts, an adjournment was made to the big school-room to hear the headmaster's report, after which the prizes were distributed by Lord Riddell. The headmaster, Mr. Arnold Powell, was able to point to a year of successful work and successful play, the number of leaving certificates obtained being large, while the successes recorded in scholarship competitions and public examinations were numerous. Further, during the year the old Epsomians had, he said, given a good account of themselves, and this was indicated by tripos lists at Oxford, Cambridge, and London Universities, and by the pass-lists of various corporations and medical schools, the Law Society, and the Institute of Actuaries. Lord Riddell then distributed the prizes and delivered a short address in which he interested and amused the audience by a character sketch of Hippocrates, whom he held up for the imitation of youth as a fine example of independent thinking, high purpose, and power of mental concentration. During the afternoon the band of the 1st Battalion of the King's Own played appropriate selections, while in the evening a choral performance of *Iolanthe* was given by the College Musical Society. The organisation of the celebrations was excellent.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT CARDIFF.

REPRESENTATIVE MEETING: JULY 21ST-24TH.

(*Continued from p. 196.*)

Lunacy Law Reform.

Dr. R. L. LANGDON-DOWN, Chairman of the Committee on Lunacy Law and Mental Disorder, introduced the Council's memorandum on the Report of the Royal Commission published in 1926. He said that the Council did not regard as satisfactory the proposal that mental patients should be classified as "voluntary" and "involuntary." The Commissioners recommended that those who entered a mental institution on their own initiative should be termed voluntary patients whilst all the others were to be placed under compulsory treatment only after medical examination and on the order of a magistrate. Thus the proposed Provisional Treatment Order, except in the case of the voluntary boarder, involved the intervention of a legal official at the outset for every patient who required institutional treatment. This was by no means desirable, as the memorandum pointed out; in fact, if the early treatment of mental disorders was to be realised, legal intervention should be limited to cases in which the patient, *though capable of volition*, definitely refused and resisted institutional treatment. There were numerous patients in whom the will was in abeyance; many of these made an early recovery, and they ought if possible to be saved from the stigma of certification. The Council thought that they should be admitted to appropriate institutions on an "authorisation for treatment" given by a relative or friend and supported by the recommendation of two practitioners. On such terms it would be possible to get relatively early treatment, whereas the Commission's plan, by continuing in this respect the formalities of the existing law, would discourage a patient's relatives from taking steps in good time. The intervention of a justice was the great deterrent to early treatment at the present time.

Dr. DAVID ROXBURGH, for Marylebone, proposed that the report be referred back for further consideration on the ground that the Council had not "taken steps to promote legislation which would protect the certifying practitioner from vexatious litigation." There was, he said, a sword hanging over the head of anyone signing a certificate of insanity, and it must somehow be removed. Sir Frederick Willis, the late Chairman of the Board of Control, had stated in the press that the Board had for ten years been making strenuous efforts to get the law of lunacy altered, but public apathy had always resulted in measures of reform being crowded out of Parliament. As a powerful body like the Board had failed in all this long time to get anything done, the only thing left to the profession was to frighten the public into taking an interest in the subject. This could be done if medical men as a body would threaten not to continue the certification of the insane, and to do this would be a public service.

Dr. Roxburgh's motion to refer the report back to the Council was lost.

Dr. TEMPLE GREY did not approve of the Commissioners' statement, quoted in the memorandum, that "insanity is, after all, only a disease, like other diseases. . . ." This was not true from the point of view of diagnosis—the point of view of the general practitioner. In cases where the judicial authority intervened to secure detention in the public interest for persons of unsound mind, that authority ought, he considered, to accept responsibility for such detention.—Dr. LANGDON-DOWN said that proposals of this kind lost sight of the other functions performed by doctors under the Lunacy Act. A magistrate could not take over a medical man's whole responsibility, since the latter would always be liable to an action for lack of care in making out the certificate. It would be wholly unsatisfactory, indeed, if doctor were released from the duty of taking car To this Dr. GREY replied that absolution from duty of care did not mean the right to be care He thought that a magistrate should always be ca in if the patient proved resistant, and in the c paratively small proportion of cases where happened, the law should accept the responsibi After some further discussion this view was acce by the meeting, which passed the following resolut to be added as a rider to the Council's report:—

That the Representative Body, whilst thanking Lunacy Law and Mental Disorder Committee for Memorandum, considers that further protection for certifying medical practitioner is required; that is to that the judicial authority when it intervenes shall ac responsibility for the detention of persons of unsc mind.

Dr. W. JOHNSON SMYTH and Dr. E. K. LE FLEM for Bournemouth, put forward another amendn to the original motion accepting the memorand This ran as follows:—

That if, under Sections 13 and 16 of the Lunacy Act, 1 a magistrate make an order to one or two medical me the case may be (two medical men under Section 13 one under Section 16) to examine a person believed t of unsound mind, it should be considered that the magist should be solely responsible as an instrument of the and the doctors should have the status of a witness enjoy the immunities of a witness.

Dr. GREY had previously pointed out that words "status of a witness" could not be applie the circumstances; properly speaking, no one b witness could have the status of a witness. Bournemouth amendment was, however, carried, a references to Section 16 had been deleted.

Conflicting Medical Evidence in the Courts.

Dr. R. G. GORDON, for Bath, drew attention to Assize Court's decision in the case of Tyndall *v.* Alc Heavy damages had been given against Mr. Alc largely on evidence which seemed to be wise after event, and on appeal the judge had said in so m words that if the original decision had been in hands of himself and his colleagues, the result w no doubt have been different. As no new facts emerged he was, however, unable to reverse opinion of the jury. Dr. Gordon invited the Re sentative Body to say that it regarded the case consternation since it "would seem to expose surgeon who, although operating in good faith with due precautions, failed to obtain a perfect re from his operation to be found in damages by a of laymen." It was, he said, impossible to ex that the jury system would be altered, but a cer amount of abuse was creeping into the practic giving medical evidence in the law courts, and it desirable that the question should be ventila Possibly a medical assessor—an "impartial person ought to sit with the judge to help him in the weig of technical evidence. On behalf of Bath he posed that the Council should consider "whe means cannot be found to ensure that expert witne appearing on opposite sides in a case shall no confuse the issue by a divergent representatio facts that a lay jury cannot assess these facts at t true value."

The meeting asked Mr. O. Hempson, the As tion's solicitor, to express an opinion on this prop and he thought that, if passed, it might well quoted against members of the profession in c of alleged negligence. It would always be poss for litigants to obtain the services of a certain c of medical man, and the weight of such witne opinions would be increased if they could be re sented as men who had courage enough to put interests of truth before those of their profess Mr. Hempson believed that it would be a great take to pass a resolution suggesting that the B.M deplored medical men giving evidence against other.

Dr. Gordon consented to withdraw his motion

"An Infernal Machine."

The fact that England may still play some part in sh affairs was brought home to the meeting by . J. C. LOUGHRIDGE and Dr. J. R. GILLESPIE, from ose speeches it appeared that Belfast Corporation, the course of departmental reforms, had introced a system of "clocking in and out." To this ignity even the medical officers were asked to mit, and one of them, rather than do so, had ontinently resigned. They felt very keenly about s in Ireland, and they invited the Representative dy to say that it objected to medical officers eing required to record the time of their arrival or departure from, duty on a recording machine, it is derogatory to the dignity of the profession." ere was all the difference between signing one's me in a book and using an infernal machine; the ond method implied disbelief in one's honour. e B.M.A. had no more loyal adherents than in rthern Ireland (statistics of membership were here oted), and "God help us," said Dr. Gillespie, "if can't have the help of this mighty organisation." They got it, the motion being carried with no sentient voice.

Public Health and Poor-law.

Several resolutions introduced by Dr. E. LEWYS-LOYD, Chairman of the Public Health Committee, re carried without much discussion. The first laid wn that all tuberculosis officers whose clinical work areas is not subject to detailed supervision by the ef tuberculosis officer should be entitled to a nimal commencing salary of £750 per annum. e second dealt with pathological reports, and ran follows:—

That the work of laboratories established by public lth authorities should, in the opinion of the Representative Body, neither provide for pathological examinas nor furnish reports on individual cases, except (1) in es which directly involve questions of public health, or (2) where provision is made for such reports by statutory nt, or (3) when the patient is stated by the practitioner be unable to pay a fee; provided that in parts of the ntry where facilities for pathological examinations and orts are not afforded either by private practitioners thologists) or by the service of the local hospital, the blic health laboratory may properly make examinations a furnish reports as these are required by practitioners f patients who are in a position to pay the usual fessional fees.

The meeting agreed that in areas where there a cases of small-pox, and where propaganda work in avour of vaccination is not carried out by the local thority, the local division should try to stimulate t authority to do this work or else do what it can t supply the deficiency.

Another resolution, described by one representative a the "anchor of the general practitioner's freedom," n de clear the Association's policy that "domiciliary a endance should, in the best interests of the patients, b provided by private practitioners in the area con-c ned, and not by a whole-time medical officer." This was not to prejudice the position of any medical o cers at present holding whole-time appointments i which domiciliary attendance was one of the d ies, nor would it, of course, apply in areas where n general practitioner was willing to undertake the w rk on suitable terms.

The question of the combination of the duties of n dical officers, poor-law medical officers, and public v cinators was discussed in the light of probable c nges in poor-law administration. Dr. H. B. LACKENBURY, Chairman of Council, explained that t combination of these offices was now approved b the Minister of Health, and Dr. MILBANK SMITH s d that when the poor-law was abolished, it must b ensured that vaccination work was not transferred t the medical officer of health. The rights of the p vate practitioner must be safeguarded. The n eting agreed that there was no objection in principle t the combination in one and the same whole-time a pointment of (*a*) the duties of a M.O.H. and those o a poor-law institutional medical officer, or (*b*) the duties of an M.O.H. or poor-law institutional officer and those of a public vaccinator. But the application of these principles in any individual instance "must be governed by local circumstances and by the opinion of the Division or Divisions concerned."

Spa Treatment of Panel Patients.

Dr. H. G. DAIN, Chairman of the Insurance Acts Committee, introduced a scheme drawn up by the British Spa Federation for the provision of treatment for insured persons at various British spas. He said that the approved societies were not yet in a position to provide this form of additional benefit, but they might be able to do so out of their "disposable surpluses" after the next valuation. Meanwhile the Federation wished to be ready, and their scheme need cause no anxiety to the private practitioner, since all it demanded from him was the filling-up of a simple form of recommendation.

Criticisms were nevertheless raised from various points of view. Dr. A. T. JONES, for North Glamorgan and Brecknock, wanted to know exactly what was the position of private practitioners in the towns to which the cases would be sent. What was the definition of the "spa physician" by whom the cases would be treated? He wanted an assurance that the care of these patients would not be the prerogative of a few.—Dr. H. M. RAVEN (Broadstairs) thought that the fee of a guinea given to the spa physician for three weeks' treatment, exclusive of radiographic and bacteriological investigations, compared favourably with the fee of "about a shilling" which seaside practitioners got for three months' temporary residence by an insured person in their area.—Dr. L. W. BATTEN suggested that the spa physician's privileges were better defined than his duties.

Dr. E. R. FOTHERGILL, who had helped to draw up the scheme, agreed that participation in the treatment ought to be open to all those who had good credentials, and should certainly not be reserved for members of hospital staffs. Dr. DAIN cleared up the position by quoting certain criteria of a specialist—namely, that he should satisfy one or more of the following conditions:—

1. That he holds or has held hospital or other appointments affording special opportunities for acquiring special skill and experience of the kind required for the performance of the service to be rendered, and has had actual recent practice in performing the service to be rendered or services of a similar character; (2) that he has had special academic or post-graduate study of a subject which comprises the service to be rendered, and has had actual recent practice as aforesaid; or (3) that he is generally recognised by other practitioners in the area as having special proficiency and experience in a subject which comprises the service to be rendered.

This definition was accepted by the meeting, and Dr. JONES was assured that it did not preclude panel practitioners from being recognised as suitable persons to give treatment of the kind contemplated. Dr. E. SOLLY (Harrogate) said that there was now a very strong movement towards the provision of so-called spa treatment for insured persons, and on no account must this treatment be given by persons with no special experience.—Dr. F. G. THOMSON (Bath) explained what services the spa physician would render, and after Dr. DAIN had summed up the case in its favour, the scheme was approved with only two or three dissentients.

What is a Spa?

An entertaining discussion arose on an attempt by the Council to define spa treatment as "treatment at a place possessing a supply of natural mineral waters of reputed therapeutic value with facilities for their application. This implies the existence of suitable buildings, apparatus and trained personnel for work in bathhouses and other physiotherapeutic departments." Dr. E. WARD, for Torquay, moved that the word "mineral" should be deleted so that the definition might include sea-water, and this

proposal was warmly seconded by Dr. JOHNSON SMYTH, of Bournemouth, who also drew attention to the excellent facilities provided for the treatment of rheumatism at certain seaside resorts.—Dr. BRACKENBURY protested vigorously against this tampering with the definition. It would mean, he said, that nearly every town and village round the coasts of the Empire could claim to be a spa—and most of those inland as well. But the claims of seaside watering-places had made a strong impression, and Torquay's amendment was carried. A proposal by Mr. BISHOP HARMAN to destroy its general effect by inserting the word "approved" before "water" was rejected with ignominy, but Dr. BRACKENBURY eventually managed to persuade the representatives that the amended version was unsatisfactory, and the definition was referred back to the Council for further consideration.

Contract Rate for Juvenile Oddfellows.

A lively debate arose on the Council's decision that a standard rate of 8*s*. 8*d*. per head per year, including drugs, was acceptable for medical attendance on juvenile members of the Manchester Unity of the Independent Order of Oddfellows. This body has found its numbers diminishing through insufficient entries into the juvenile lodges. Failure of recruiting has been due to medical benefit being no longer given in many areas because it costs too much, and the Manchester Oddfellows have approached the B.M.A. to see whether such benefit cannot be provided at an economic rate. The policy of the Association has been that the same fee should be paid as under the National Health Insurance Acts—namely, 9*s*. plus 2*s*. 3*d*. or thereabouts, including medicine—but this policy, Dr. BONE reported, has been more honoured in the breach than the observance. There were few areas, he said, where anything like a capitation fee of 8*s*. 8*d*. had been obtained for dependants of the classes insured under the Health Insurance Acts, and the Council thought that it was a fair fee for the particular work to be done. There were in the Society 151,000 juvenile members, and the capitation fee at present being paid on their behalf was between 6*s*. and 7*s*. The profession would gain some £20,000 by a uniform rate of 8*s*. 8*d*., and in comparing this rate with fees received in the public medical service it must be remembered that there would be no deduction for the costs of collection and expenses generally, and that the service given would be relatively restricted as the children were under 16 years of age and needed less attention. Dr. BRACKENBURY said that the advantage of getting rid of records, of the need of certification, and of the disciplinary machinery was more than equivalent to any drug fees the practitioner would get if he had to provide the patients with medicine. He thought that 8*s*. 8*d*. was at least equal to the fee now being received under the Insurance Act.

This view was challenged by several representatives, whilst others maintained that 13*s*. per head per annum could be secured in many areas. Some pointed out that children should receive more and not less attention than adults. Dr. LEWIS LILLEY, for Leicester and Rutland, moved that the standard rate be approved "always provided that in any area in which a higher rate at present is paid this rate shall be allowed to stand, due regard being given to the special conditions and scope of service rendered in such area." But this amendment was lost, and the meeting finally approved the Council's resolution by a majority of 81 to 63. This resolution not only agreed to the standard rate of 8*s*. 8*d*., but also authorised the Council to approve a slightly lower rate in areas where, owing to economic conditions, the standard rate was not feasible. It laid down "that it be an essential part of this arrangement that there must be free choice of doctor by patient and of patient by doctor."

As the vote did not show the necessary two-thirds majority in favour of the resolution, it will not become part of the policy of the Association.

Coördination of Hospitals.

The Council having approved a memorandum presentation to the Minister of Health, this introduced to the Representative Body by McADAM ECCLES, Chairman of the Hospitals C mittee. It outlines a scheme based on the assump that poor-law hospitals will shortly come under control of county and borough councils. The step in coördinating their work with that of voluntary hospitals must, in the Council's opin be the establishment of a central advisory autho appointed by the Ministry of Health. This "cen consultative hospitals council" should map out country into areas—each served by an "coördinating hospital committee"—containing voluntary and municipal hospitals. These w again be subdivided and, as suggested in the Inte Report of the Consultative Council on Medical Allied Services, 1920 (the Dawson Report), all hospitals in a given district would be grouped ro a central or base hospital—generally one of bigger voluntary hospitals. This would be expe to set the standard of hospital practice and be chief centre of education and research. As "area coördinating hospital committees" w generally cover districts too large for administra control, each group of hospitals would work u the direct advice—and in some respects adm tration—of a group hospital committee. A pu hospital, when not itself the central or base hosp should develop in coöperation and not in competi with the voluntary hospital. The responsibility treatment in public hospitals could be underta by a visiting medical staff (on a part-time b with the assistance of a resident medical staff; practitioners treating patients for whom the Gov ment or local authorities are responsible, sh receive either an honorarium or a fixed salary definite services and responsibility.

A proposal to refer the memorandum back the Council for further consideration was m from different points of view by Dr. E. W Masterman, for Camberwell, and by Dr. Gra Little, M.P.

Dr. MASTERMAN said that this was a consulta scheme. In the opinion of all the medical sup tendents of poor-law institutions it was "impossil and it would wreck all attempts at coöperation helpfulness. He was all in favour of the volun system, but if the voluntary hospitals kept ou the State service they could not expect quite same consideration as if they were in it. In scheme, the base hospital should logically be State hospital, because this was obliged to take patient requiring treatment, whereas the volun hospitals, especially those with students, were ob to select their cases. He did not believe, how that it was wise to put any hospital in a primar superior position in a district. Nor could he app the suggestion that in public hospitals responsib for treatment should be taken by the visiting s In public health hospitals at the present time t was a whole-time regular staff and consultants only called in when necessary.

Dr. GRAHAM LITTLE pointed out that the Da Report had been published eight years ago whe situation of the voluntary hospitals was despe Now 75 per cent. of those in the provinces, an per cent. of those in London, had balances at banks. It was dangerous to give this openin the Ministry of Health for controlling the volun hospitals, and it would be very regrettable if policy of the Association were to weaken the volun system.

Dr. M. W. RENTON (Stratford) complained the threshold of the voluntary hospitals was often closed to general practitioners. There w mistaken idea that the whole of the work shoul done by consultants.—Mr. BISHOP HARMAN trasted the views of Dr. Masterman and Dr. L in their opposition to the scheme. It would

possible to please both parties.—Dr. TEMPLE GREY ged postponement. He did not like the suggestion at the central consultative council should be set by the Ministry of Health.—Mr. H. S. SOUTTAR, wever, said that if the Association's decision was be of any value it must be sent to the Minister at ce. It was surely obvious that there must be ne consultative body to coördinate hospital rk. The object of having base hospitals was to e waste of time and energy; they were not going take "good" cases, but were going to set an ample of what could be done, and were going to p others in every possible way. Whilst it was the ty of public hospitals to take all and sundry tients, it was the duty of voluntary hospitals to pply the highest possible level of medical service, provide education for medical men, and so far as ssible to assist the public services.

Dr. C. E. S. FLEMMING saw no reason to fear that State would want to control voluntary hospitals. en State aid would not necessarily mean State erference.—Sir RICHARD LUCE, M.P., said that rdination would be impossible without the inter- ntion of some outside body, representing the erests of all concerned. Cottage hospitals, fever spitals, and the rest would look to the base hospitals a educational centres, and they would be a very portant element in post-graduate work.—Dr. THERGILL was much more frightened of State spitals than of voluntary hospitals, the majority which in this country were staffed by general ctitioners.—Dr. R. C. BUIST, speaking as a member the Voluntary Hospitals Commission, said he d signed with a heavy heart that section of Commission's report which dealt with financial istance of the voluntary hospitals from mass tributions. When the poor-law hospital became nicipal and lost its stigma, it would inevitably ne into competition with the voluntary hos- al, and if its service was adequate it would n sooner or later. People who provided treat- nt for themselves by paying rates would entually drop out of contributory schemes.—I. A. B. MURRAY pointed out that already very few spitals were truly voluntary; their work on venereal eases, child welfare, ophthalmia neonatorum, and other directions was State-aided. Whereas in hospitals the voluntary staffs, in giving their vices, were only casting bread upon the waters, ctitioners who joined the staffs of small country spitals did their work for nothing and got no irect return. Much of this work should be paid —a suggestion which had found no place in the morandum.

While summing up in favour of referring back the morandum to the Council, Dr. MASTERMAN said t in his Division there were 2400 beds belonging public authorities, and no voluntary hospitals. ery practitioner was welcome to come in, examine, l talk over his case. He visualised, in the future, annexe in State hospitals where practitioners ld definitely undertake the treatment of their n patients.

The amendment being lost by a large majority, the eting approved the Council's memorandum. ther discussion took place on the criteria for ctitioners treating private patients in private rds or nursing homes attached to hospitals, but s question was referred for further consideration

Other Subjects Discussed.

The following motion by Edinburgh and Leith s approved without discussion:—

(1) That in the interest of the public health the British dical Association support any measures which may be en so to alter or amend existing legislation as to give ater power to local authorities to suppress unnecessary se which is disturbing to the lieges; and (2) that any se from 11 P.M. to 6 A.M. which is capable of being vented or mitigated and which is dangerous or injurious health, shall be a nuisance within the meaning of the blic Health Acts.

A resolution passed in 1926, saying that in accident cases treated at a voluntary hospital, where medical attendance is covered directly or indirectly by insurance, "the hospital authorities should recover from the insurance company the full cost of maintenance and treatment," was amended by deletion of the words "from the insurance company."—Buckinghamshire carried a motion asking the Council to consider whether some arrangement could be made for pay ment for the emergency services rendered by doctors to patients meeting with accidents on the roads.

In introducing the report of the Naval and Military Committee, Dr. F. W. GOODBODY, the chairman, advised that careful inquiries should be made at the present time before advising medical men to enter the Indian Medical Service.

Dr. C. L. LEIPOLDT, Secretary of the British Medical Association in South Africa, referred to the need for improving post-graduate education in England. Practitioners from the Dominions regarded themselves not as students but as the equals of any practitioner in this country. They therefore did not appreciate the instructive methods of specialists at the big teaching hospitals in this country.

At the end of the meeting a cordial vote of thanks was passed to Dr. Hawthorne for presiding, and to other officials who had worked for the comfort and convenience of the meeting.

THE ANNUAL MEETING.

At the annual meeting at the City Hall on July 24th the outgoing President, Sir Robert Philip, handed the insignia of office to his successor, Sir Ewen Maclean. The President-elect, Prof. A. H. Burgess, was introduced to the assembly. At the adjourned annual meeting, held at the New Theatre on the evening of the same day, the new President delivered the address published in our last issue. The Sir Charles Hastings Clinical Prize was awarded to Dr. Ambrose Owen, the Stewart Prize to Sir Malcolm Watson, and the Katherine Bishop Harman Prize to Dr. Ronald Hare.

THE RELIGIOUS SERVICE.

At the official church service, held at St. John's Church on July 24th, the sermon was preached by the Rev. Garfield Williams, M.B., honorary Canon of St. Albans, who spoke on the character of St. Luke. Even yet, he said, the Church had not realised the importance of what might be described as the extra-professional activities of that travelling physician of the first century. He was the greatest biographer of our Lord, so far as pure biography was concerned; he was the first and greatest of Church historians, and he was the companion and guardian of Paul the missionary. He had the practical mind of the physician, and he thought out the ways and means whereby the visions of his companion Paul might be carried out into action. One side of his character to which the preacher drew attention was his interest in persons—in personal details, at all events those which were important. That was true of the physician always. He did not treat diseases, in spite of what the public might suppose; he treated persons.

THE ANNUAL DINNER.

More than 500 people attended the annual dinner of the Association, held at the City Hall on July 26th, when Sir Ewen Maclean presided, and the guests included the Lord Mayor and Lady Mayoress of Cardiff, the Marquis and Marchioness of Bute, the Archbishop of Cardiff, Dr. Franklin Martin (director-general of the American College of Surgeons), and Sir George Syme (president of the Federal Committee of the B.M.A. in Australia).

Proposing the health of the City of Cardiff, Mr. R. G. Hogarth said that, like many other visitors, he had imagined Cardiff as a city of smoke and ugliness; he found it endowed with civic buildings unrivalled in many a European capital. It was interesting to think of all these beautiful and

concordant buildings as an expression of the coal trade, now going through a time of trouble, and he trusted that the courage which had made Cardiff great would stand by her in the present difficulties. In his response the Lord Mayor said that they were all hoping that the day would come when Cardiff would be recognised as the capital of Wales, and they had already reserved a site for the National Parliament. Meanwhile Cardiff would appeal to the medical profession because it was a city without a slum. There was not one house in it that the Ministry of Health would condemn.—Dr. H. B. Brackenbury replied to the health of the British Medical Association, proposed by Sir William Seager, and Dr. C. O. Hawthorne, giving the health of the guests, coupled the toast with the names of Sir William Diamond (chairman of the Board of Management of the Cardiff Royal Infirmary) and of Sir George Syme, both of whom responded.—Dr. W. E. Thomas wittily proposed the health of the President, Sir Ewen Maclean, who was, he said, the first ex-chairman of the Representative Body to rise to this high office.—After this health had been drunk with musical honours, and Sir Ewen had replied, the proceedings ended with the National Anthem.

THE SOCIAL SIDE.

The principal building of Cardiff is the Castle, owned by the Marquis of Bute, which comprises a large Roman fort, a Norman keep, and residential buildings belonging to nearly every English architectural period. The grounds extend for several miles towards Llandaff and the part now called Cathays Park has been made over to the city as a site for national and municipal buildings. These include the Law Courts, the County Hall, the Technical College, the Welsh National Museum, the University College of South Wales and Monmouthshire, and the City Hall. In the centre lies the National War Memorial, and the whole group of buildings, constructed in Portland stone and separated by open spaces and wide avenues, is unlike anything to be seen elsewhere in this country.

The scientific sections met at University College and in the Technical College, but most of the social functions, and the Representative meeting, were held in the City Hall. On Tuesday evening the Hall was used for a reception by the President and local executive, and on this occasion a birthday present was given by the Association to the Earl of Dumfries, Lord Bute's eldest son, who was celebrating his coming-of-age. On the following evening the Hall was again used for a reception and dance, the host this time being the Lord Mayor.

On Wednesday afternoon there was a reception at the Cardiff Royal Infirmary; on Thursday Lord and Lady Bute entertained some 6000 guests in the Castle grounds; and on Friday evening the National Museum, at an official reception, displayed its many beautiful treasures, together with a special collection illustrating the history of Welsh medicine.

On Sunday the Representative Body enjoyed an excursion to St. Donat's Castle, where a religious service was held in the courtyard. Before setting out the Representatives attended at the National War Memorial, where the President-elect laid a wreath on behalf of the Association. Many expeditions to places in the locality, including the Docks and the Bargoed Colliery, were arranged during the subsequent week.

The Popular Lecture was given at the New Theatre on Friday evening by Sir Berkeley Moynihan, who spoke on Art in Medicine, and on Friday the honorary degree of Doctor of Laws was conferred by the University of Wales on Sir Robert Philip, Dr. H. B. Brackenbury, Dr. W. W. Chipman (Professor of Obstetrics at McGill University), Sir Thomas Lewis, Dr. Franklin Martin, and Sir George Syme.

THE ANNUAL EXHIBITION.

An account of the exhibition, which was formally opened on Tuesday by Sir Ewen Maclean, will appear in a forthcoming issue of THE LANCET.

SECTION OF MEDICINE.

Sir THOMAS LEWIS, who presided at a discussion

DISEASES OF THE CORONARY ARTERIES,

remarked that the dictum, "a man was as old as arteries," contained a considerable element of tru especially if it was applied to the cerebral, renal, a cardiac vessels. The coronary arteries had be the subject of discussion on several occasions these meetings as well as elsewhere, but many proble concerning them were still wrapped in obscuri Disease of the coronaries always interested medi men, for many notable physicians had been affect by it. John Hunter, and in modern times Sir Jam Mackenzie, were two out of many examples. T western counties had a peculiar interest in the c dition, for the earliest and some of the most importa observations on coronary vessels had originated the 160 years ago Heberden gave the first clear descr tion of coronary disease. Its connexion w angina pectoris was first pointed out to Edwa Jenner by a surgeon living in Ross, who did a po mortem on a case of angina and noted disease the coronary arteries. Jenner wrote his opin on this to Heberden in a private letter, but his vie were never published, out of consideration to friend, John Hunter. There had been great advan in recent years, in two directions especially. T first was in the study of the anatomy of the vess of the heart and their anastomoses in heart muso The second was the precise study of the sympto and signs of coronary thrombosis. This was bou to throw light on our knowledge of angina pecto

Dr. GEORGE A. ALLAN (Glasgow) began his open address by defining the limits of the discussi Speakers must beware of detracting from the va of the main subject by excursions into theories angina pectoris. Nor must they narrow the outl by concentrating on one aspect alone of coron disease, such as coronary artery thrombosis. then surveyed some of the essential features of t subject.

The association of special symptoms with occlus of the coronary blood-supply had been recogni since 1878, but only in the last few years had a cl distinction been established between it and the m widely recognised syndrome of angina pectoris. V important anatomical investigations had been ma by Gross and his collaborators, who concluded t the heart was perhaps the richest organ in capill and precapillary anastomoses. From the morl anatomy point of view there were four clearly defi diseased conditions of the coronary arteri atheroma, arterio-sclerosis, syphilis, and calcare degenerations. These terms were often so loos used that it was necessary to define them. Atheron the commonest primary lesion in the coronaries, ha patchy distribution. It was the same disease atheroma of the aorta and had the same tende towards ulceration and thrombosis though in a l degree. Atheroma was very irregular in its dis bution in different vessels. The coronaries a other deep arteries might be affected, while superficial arteries might give no indication of presence. Arterio-sclerosis was a more diffuse proc characterised by thickening of the media and intin It was the same as arterio-sclerosis associated w high blood pressure and might, or might not, ca narrowing of the vessel. Syphilis, though comm in the aorta, was rare in the coronaries. They we however, liable to be occluded at their point of ori by syphilitic mesaortitis. Calcification might superimposed on either atheroma or arterio-sclero or might occur as a primary medial degenerati The deformity it produced in association w atheroma frequently caused narrowing of the lum with or without thrombosis.

With regard to the relative frequency of t conditions, the speaker found that out of 1000 po mortems at the Western Infirmary, Glasgow, corona artery disease was found in 371. Of these 238 show

efinite lesion of the myocardium—178 presented osis, 12 fibrosis and fatty change, and 48 fatty nge alone. Atheroma was the most frequent on and caused fibrosis in 51·2 per cent. of cases. ny of the cases illustrated the remarkable adaptaity of the anastomotic channels under favourable ditions. From this study, in addition to general rmation regarding frequency and effects of ons, three points emerged: (1) severe coronary rowing might be present without obvious lesion in myocardium; (2) old-standing severe arterial lesions actual occlusion with fibrosis might occur with no ical history pointing to it; (3) patients might die h symptoms suggesting coronary artery occlusion no such lesion be found. There was no diagnostic ptomatology which would cover all cases of nary disease. When the blockage was abrupt ain features were present. Hamman divided s into six classes: (1) sudden death; (2) death few hours; (3) continued myocardial insufficiency h death in weeks or months; (4) recovery after ve symptoms; (5) cases that were not grave but gnisable; (6) mild or uncertain cases. He would e symptomatology to other speakers. The gnosis was grave, but owing to difficulties in gnosing mild cases, the proportion of recoveries ld not be stated. In treatment they must disguish between treatment of the actual disease and tment of a complication, such as thrombosis, ing in the course of that disease. In thrombosis first indication was to relieve the pain. Morphine required, often in large doses. Digitalis was metimes of benefit. He himself had been impressed h the value of glucose in strengthening the heart, had not been able to follow a sufficiently large es of cases to speak dogmatically. He gave f a pound daily. Treatment of actual disease of coronary arteries resolved itself into prevention of h conditions as atheroma and arterio-sclerosis. s could not be efficient until their ætiology was ter known.

Ischæmia and Infarction.

Dr. CAREY F. COOMBS (Bristol) based his remarks cases seen as in-patients. He defined two chief nary syndromes, ischæmia and infarction. In sæmia there was substernal pain, excited by rtion and relieved by rest. In infarction the sternal pain was continuous. These groups were rly defined, although it was difficult to draw a line ween them, since a case of ischæmia might pass r into one of thrombosis. The age-incidence of sæmia and infarction corresponded fairly closely the highest peak of the curve for ischæmia urred about a decade earlier than that for infarcn. The reason for this was that ischæmia was erally due to syphilis, which caused nipping of the ice of the coronary arteries but rarely led to rction, whereas degenerative conditions, especially eroma, caused destruction of the intima and rction. With regard to sex-incidence, males ponderated to the extent of 71 per cent. in sæmia and 82 per cent. in infarction. Most of females in the ischæmic group had high arterial sion, but this was not so for the males. The effect heredity could not be statistically proved, as it difficult to get accurate family histories. The ients died at an advanced age (60–70), so that family history had been forgotten. Nevertheless, re was a decided family incidence; several examples e quoted.

he ætiology of coronary disease was graphically wn. Rheumatism and ulcerative endocarditis lom produced gross lesions, for although much nage to vessels was found microscopically, there s, as a rule, no interference with the blood-supply. y interesting were the infective group of cases, which the speaker had seen several examples urring about the age of 40 and often associated h phlebitis. Most of the cases were of the degenera- type and arose from circumstances over which y had little or no control. With regard to treatment, he had found caffeine and diuretin of value in patients who suffered from cardiac pain on slight provocation.

Dr. IVOR J. DAVIES (Cardiff) emphasised the importance of looking for arterio-sclerosis or atheroma in clinical examination of patients. Burns, in 1809, had compared the diseased heart to a limb round which a moderately tight ligature had been tied. Ordinary work could be carried out, but further exertion produced the symptoms of intermittent claudication. Intermittent claudication was the probable cause of the pain of coronary disease. True cardiac pain did not occur in valvular disease unless decompensation was also present. The character of the pain was important. It tended to be epigastric in coronary thrombosis, hence the liability to confusion with abdominal disease. Angor animi was pathognomonic of coronary disease and emotional stress was often an exciting cause of the pain. The speaker then gave an account of the symptoms and physical signs of thrombosis, laying special stress on restlessness, especially if it occurred in a patient already suffering from heart disease.

Diagnosis and Prognosis.

Dr. A. G. GIBSON (Oxford) dealt with diagnosis and prognosis. Coronary disease should be suspected in cases of: (1) serious pain in the chest; (2) acute cardiac failure with fainting attacks; (3) acute pain in the upper abdomen with an irregular heart. It was necessary to distinguish between angina and coronary disease. In the former the pain came on during exertion and lasted for minutes, dyspnœa was absent, and the blood pressure was normal or raised. In the latter the symptoms lasted hours or days; there was vomiting, abnormal pulse-rate, low blood pressure (especially low pulse pressure), and, later, fever and leucocytosis. In some cases there was acute cardiac failure with pallor, sweating, restlessness, and entire absence of pain. Fainting attacks in persons over 40 should be regarded with grave suspicion. The blood pressure, pulse-rate, and response to exertion should be watched. The distinction between coronary thrombosis and acute abdominal conditions might be difficult. If they occurred together it was better to operate, for the administration of an anæsthetic, although the risk was greater, did not present insuperable difficulties. Coronary disease might be suspected in chronic cardiac failure occurring in older people. But however careful they might be in diagnosis, there would be some cases impossible to identify during life. With regard to prognosis, figures did not help much until the different factors concerned in the condition could be separated. Patients who recovered from an attack of thrombosis might live many years even with extensive fibrosis of the heart muscle. Specimens of hearts from two such cases were shown.

Dr. JOHN S. CAMPBELL (Belfast) showed a series of X rays of hearts in which the coronary circulation had been injected with an opaque emulsion. Age changes were illustrated by a fœtal heart where the right and left ventricles received an equal blood-supply, the heart of a man of 50 showing decreased vascularity of the right ventricle, slightly tortuous arteries, and better developed anastomoses, and that of a man of 75 where these changes were much more marked. The next series dealt with anastomoses developing after coronary thrombosis. In one case of thrombosis of the right coronary and circumflex the whole of the arterial tree distal to the block had become filled with injection material through anastomoses with branches of the left coronary. Diagrams of variations in the areas supplied by the two coronaries were also shown.

Dr. D. EVAN BEDFORD (London) spoke of electrocardiographic changes and described the typical curves found in coronary thrombosis. Widening of the curves, splintering or notching of the waves, and low voltage were common in coronary disease. He showed electrocardiograms taken two days and four days after coronary thrombosis. Besides the above,

they were characterised by absence of the T-wave and a plateau following the R-wave in lead 2. A few weeks later there was a change. The T-wave was inverted in either lead 1 or lead 3, and was flattened in lead 2, but to a less degree. After 17 months in the case shown there was still inversion widening and notching, but the curve then began to change in the direction of the normal. Eventually normal curves were obtained. One great value of electrocardiograms was that they strengthened the physician's hand when he insisted on prolonged treatment after an attack. Patients often tried to work as soon as the acute stage had passed, and it was important to prevent this.

In the discussion which followed, Dr. BAIN said that coronary spasm had been advanced in France as the cause of cardiac pain. It was difficult to see how sclerosed arteries could go into spasm. He would like to ask, however, whether spasm could be the cause of angina without coronary disease.

Prof. T. G. MOORHEAD (Dublin) was interested in Dr. Coombs's infective group of cases in which angina was associated with phlebitis. He had published a case of thrombo-phlebitis migrans, in which phlebitis had begun in the leg, then attacked various regions of the body, and, finally, coronary thrombosis had occurred. The patient was now in good health.

Dr. A. R. GILCHRIST (Edinburgh) called attention to a group of cases in which angina was associated with paroxysmal tachycardia. He doubted whether as much could be deduced from electrocardiograms as was sometimes thought. He had one case which showed inversion of T-waves in several attacks and was diagnosed coronary thrombosis. Post mortem no occlusion of either coronary was found. The pain was probably due to paroxysms of tachycardia. Electrocardiographic records were seldom confirmed post mortem and often none had been taken before the attack.

Dr. DAVIES, in reply to Dr. Bain, said that coronary spasm was the probable cause of angina. It was doubtless the same lesion as the cerebral angiospastic attacks which caused transient hemiplegia. Alterations in cardiac rhythm were certainly due to thrombosis of the artery to the A.V. bundle.

Dr. BEDFORD said that it was dangerous to give a prognosis merely from the study of an electrocardiogram. An inverted T-wave could not be said to be of grave import, because it frequently became altered later. He considered low voltage the most serious sign. It was very difficult to obtain post-mortems on cases that had been followed electrographically and therefore there was no large series of such cases. In many of his cases, however, the diagnosis had been so confirmed.

Conclusion.

The PRESIDENT summed up the symptoms of coronary thrombosis and described the appearance of the heart in experimental lesions. With regard to prognosis, he agreed with several speakers who had said that the condition was not necessarily a very grave one where there was recovery from the initial attack. In giving a prognosis they had to consider the state of the coronary arteries. A review of the history and the condition of the patient after the event would help in this.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

AT its first session, under the chairmanship of Mr. T. WATTS EDEN, a discussion on the prevention and treatment of

UNSUCCESSFUL FORCEPS CASES

was opened by Dr. DOUGLAS MILLER (Edinburgh), who analysed a group of 558 cases delivered in Manchester, Glasgow, and Edinburgh. In 211, of whom 139 were primigravidæ, the underlying cause of dystocia was *disproportion*, due for the most part to pelvic contraction, and in a few to an abnormally large child. The flat rachitic type of pelvis was exceptionally common in Glasgow. In 14 deform of the outlet and in 6 a contraction ring prov an additional obstacle. Disproportion varied wi in degree; sometimes it had been difficult to ren the head even when crushed, sometimes labour w have been normal if forceps had been withheld. 161 patients the cause of difficulty had been a *post position of the occiput*, for the most part unrecogni This fact emphasised the urgent necessity of accu orientation of the head, for which purpose the ear a more reliable guide than sutures or fontanelles. most of these occipito-posterior cases the head been deeply engaged, with the occiput either in hollow of the sacrum or still obliquely poste In the large number, however, in which the head still high or movable at the pelvic brim, the soft p had been severely bruised and lacerated by slip forceps. In several cases the cervix had been partially dilated, and was badly torn; somet the tear involved the lower uterine segment.

In a third group of 151 cases *no abnormality* been present. Some of these might have occipito-posterior before their transit to hospital in a large number anxiety to relieve suffering obviously made the practitioner apply for before dilatation and head-moulding had sufficie advanced. The fourth group consisted of 12 cases.

Treatment.

Where disproportion was the cause, treat depended on its degree, the condition of the c and whether an adequate test of labour had made; 78 patients of the 211 had been deliv spontaneously or by low forceps. Craniotomy had employed in 98 cases and Cæsarean section on 12; 21 of the 29 maternal deaths had been du puerperal sepsis. Of the 161 cases due to occi posterior position the majority were advanced in second stage with the head arrested on the p floor, and an attempt had usually been mad rotate manually and complete delivery with for When impaction had prevented rotation, craniot had usually been performed. In two-thirds of instances in which the head had been arreste the inlet of the pelvis, or the upper part of the ca manual rotation of the head had been combined external rotation of the body. Where the os been found fully dilated, forceps had been immedi put on and delivery completed; when the c had not been completely effaced, labour had allowed to proceed. Internal version, perform a last resort in 11 of these cases, had saved thr the children.

In most of the 151 cases in which premature s cation had been the only cause of failure, the pa had been placed under morphine or twilight and delivered spontaneously or by low forceps. the child had been dead or dying, craniotomy been performed.

The total maternal mortality had been 5 10 per cent.; of these the cause had been sepsis uterine rupture 8, post-partum hæmorrhage shock 6, and pneumonia 3. In 132, or 23·6 per the puerperium had been morbid by the B standard; 357 children, or 64 per cent., had lost. Many of the patients had only left ho after exhausting weeks of fever, and many had to undergo further weeks or months of ill-health laceration of the cervix, vagina, or pelvic End-results in 98 patients who had been follow had been 24 complete recoveries and 74 re disabilities of varying degree, the most fre being laceration of the cervix, usually due to ap tion of forceps before dilatation. Backward dis ment of the uterus, usually associated with involution, downward displacement, and pelvic tion was common. Pelvic infection occurr one-third of the cases; 24 patients had had to un operation for their resulting disabilities.

Unsuccessful forceps cases resulted largely fro breach of three rules: forceps should never be a

when marked disparity existed between head and is, hardly ever when the head was still movable ve the pelvic brim; (2) without an exact know- e of the position of the head; (3) until the cervix completely effaced and retracted over the present- part. It would be a counsel of perfection to id the application of forceps except on strict cations, but greater care and discretion in their was a reasonable ideal.

The Importance of Antenatal Care.

rof. JAMES HENDRY (Glasgow) pointed out that lic interest in puerperal morbidity was thoroughly ised, and that there was no doubt whatever that doctor was held responsible. Dr. Miller had ided the records; he himself would attempt to ider to what extent more efficient antenatal would have prevented these accidents.

most of the cases of disproportion, contracted is and not an abnormally large child had been cause. This could nearly always have been tified in early pregnancy; skeletal irregularity an important danger-signal. Internal examination essential, and the form of the pelvic outlet should noted; a sharp subpubic angle with reduced ance between the tuberosities indicated contraction he outlet and might pass unnoticed until late in ur. Examination of the diagonal conjugate eter should always be attempted. It might difficult in the early months, but was usually ible during the seventh or eighth, especially if patient "bore down," relaxing the perineal cles. Short fingers were not really a handicap. fingers should also sweep round the pelvic brim etect asymmetrical deformity, a small transverse eter, or ovarian cysts or fibromyomata. Towards end of the pregnancy a pendulous abdomen in a igravida should arouse suspicion. If the head d to descend into the pelvic cavity during the month the cause might be faulty presentation, lasm, or even placenta prævia, but was often racted pelvis. The history of previous labours most valuable. X rays were not of much help, pt possibly in the generally contracted pelvis, n Prof. Martin's method was of value.[1] At this e the fœtal head was the best of all pelvimeters. method of election, that of Müller, should be rmed under an anæsthetic during the last month. ntracted pelvis, however, the position of the head d not indicate how it would mould or alter its tion in labour, and Munro Kerr's method of imetry gave a far more reliable prognosis. In ur, if forceps were decided on, a most careful amination should be made, if necessary with the l in the vagina, after the patient had been sthetised, and if great difficulty were then apparent use of forceps should be foregone. Rectal ination was safer than vaginal examination, just as satisfactory. In borderline cases, if ress were not satisfacory after a good long ur, the lower segment Cæsarean section should erformed.

cipito-posterior presentations were usually identi- e by careful antenatal examination. Where ation was difficult two X ray photographs, frontal lateral, should give a complete diagnosis. Dr. ltain had secured permanent correction by pads a binder in 87 per cent. of primigravidæ, and er cent. of multiparæ.[2] 60 per cent. rotated spon- ously, but it was important to recognise the ciation of this condition with protracted labour. as often accompanied also by slow dilatation of cervix. Other abnormal presentations, or the rmities which would cause them, were practically dentifiable before labour. Hydrocephalus was y detected, except when obscured by hydramnios, perforation might prevent an exhausting labour. ual dilatation of the cervix was seldom justified, even when attempted, was hardly ever complete.

[1] Zeitschr. f. Geburtsh. und Gynäkol., 1927, xci., 3, p. 504.
[2] Proc. Edin. Obstet. Soc., 1926, p. 133.

Antenatal examination of this kind could often be carried out by the general practitioner, but there was need for efficient consulting centres. The work was far too responsible and difficult for midwives, and no midwife should be authorised to undertake the care of a pregnant woman unless provision were made for careful examination by a medical practitioner before labour were due.

Prof. W. FLETCHER SHAW remarked on the large number of craniotomies in the series compared with Cæsarean sections, in spite of the increased use of the section by every obstetrical unit. Performed upon a "clean" patient its mortality was very low, but after attempts at forceps delivery it was highly dangerous. Many patients were badly lacerated, and others were shocked; some were definitely infected, and in some cases the child was dead or damaged. Pubiotomy had never become popular, and was only useful when a small amount of widening would make the difference between retention and expulsion. Miscalculation of the amount led to severe laceration.

The main reasons for failure in forceps delivery were professional and lay apathy. Obstetrical teaching was relegated to a subordinate position, and the public did not realise how difficult maternity cases were. Remuneration was poor, and the relatives looked down upon a doctor who called in expert assistance. It was necessary to educate the public and to provide more and sounder clinical teaching. Stress should be laid on four points: antenatal care, asepsis (Prof. Shaw condemned coal-tar derivatives), resistance to the relatives' importunity in the first stage of labour, and definite diagnosis before applying high forceps.

Discussion.

Dr. CHARLES DOUGLAS (St. Andrews) appealed to general practitioners to shoulder the responsibilities of antenatal work, and warmly recommended version as an effective stand-by when hospitals were far off, with the stringent proviso that the os should be fully dilated. Chloral was very valuable in securing dilatation. Even after forceps had failed, version would often safeguard future maternal efficiency.

Prof. BETHEL SOLOMONS (Master of the Rotunda Hospital, Dublin) put most unsuccessful forceps cases down either to abysmal ignorance or to wilful negligence. The first could be removed by training, especially on the management of the all-important first stage; the second should be punished by legal process. Failed cases should be distinguished from cases where forceps had been used tentatively with a view to later pubiotomy or lower segment Cæsarean section. The present curriculum was too short, and an extra year should be allotted to the post-graduate study of obstetrics. He deprecated Dr. Miller's classification of "children dead or dying on admission." It was impossible to tell whether a child was dying, and the impression that it was possible would lead to a far too free use of the cephalotribe. The man who had strength of mind to avoid forceps when contra-indicated, and strength of arm to deliver the head when they were indicated, would have no failed cases. In the Rotunda there had only been 10 in 6000 or 7000 deliveries.

Dr. MABEL RAMSAY (Plymouth) viewed craniotomy with horror, and recommended section, even after forceps had failed. Antenatal schemes broke down because the patient would not realise their value; moreover, the officers in charge were often inadequately trained.

Dr. F. EDGE (Birmingham) saw a solution in compulsory antenatal consultations with adequate remuneration.

Mr. L. C. RIVETT (London) urged four conditions for applying forceps: engagement of the head, full dilatation, passage of the greater diameter through the cervix, and an empty bladder. Neither version nor craniotomy should be performed when the liquor amnii had drained away and the uterus was in an

irritated condition; Cæsarean section was then much safer. A six months' course in obstetrics was the very minimum.

Dr. R. KELSON FORD (Preston) asked for expert opinion on instrumental version and the use of Kellan's forceps. In the municipal maternity home of which he had charge he had no difficulty in getting paying patients to attend for antenatal, but only about one in three came for postnatal examination. Antenatal inspection should be performed not later than the thirty-sixth week. The Association should insist that, in any future State-run maternity hospital, the private practitioner should be able to attend his own patients.

The Secretary, Mr. B. K. TENISON COLLINS (Cardiff), said that certain midwives recommended doctors for the rapidity of their deliveries, regardless of the result; practitioners were thus forced to use forceps against their better judgment. The remedy was an educative campaign.

Dr. KENNETH WILSON (Blandford) described a case of hydrocephalus, and one in which multiple fibromata had nearly caused a failed forceps case.

Dr. H. R. PARAMORE (Rugby) advocated pubiotomy, which he claimed was easy and gave good results, although the hæmorrhage and laceration it caused were somewhat alarming.

Dr. J. BOYD (Manchester) objected to Prof. Solomon's strictures on the ignorance and negligence of practitioners, and said that if the Master of the Rotunda had to work under the conditions of some general practitioners his results would compare unfavourably with theirs.

Dr. J. S. QUIN (Dublin) pointed out that a Master had to undergo a severe apprenticeship in some of the worst slums in the world. Students were not taught enough about normal labour, and when they might refrain from interfering. A quarter of a grain of morphia at the onset of labour might result in a good many births before arrival, but it saved much anxiety and, if always given, would wipe out failed forceps cases. If lysol were abolished a large number of deaths from sepsis would be avoided.

Replies.

Dr. MILLER, in reply to Prof. Solomons, said that by "dying" children were meant those in which fractures of the skull could be palpated. In some cases, moreover, when neither pubiotomy nor Cæsarean section were available, the claims of mother and child had to be balanced, and the mother's were, in his opinion, the weightier.

Prof. HENDRY said that proper care of the first stage should exclude contact with relatives. He had not had much experience of "tentative" forceps; in the cases that came to him the forceps had generally been used "all out." When it was necessary to intervene after the uterus had become dry and irritated, he first allowed the patient a considerable time to recover from shock and gave morphia; intervention should only be done with a deep anæsthetic. Instrumental rotation was very dangerous in the primigravida, whose vaginal walls had not been dilated before. His limited experience of Kellan forceps had not been encouraging.

Prof. SHAW, in reply, agreed in condemning coal-tar antiseptics. He recounted the system by which a north country practitioner charged a composition fee, performed careful antenatal examination, and employed capable midwives to attend all normal confinements for him. He himself administered after-care, but only attended confinements when conditions were abnormal. He took full responsibility, but by eliminating sources of complication at the outset saved endless trouble and compulsion by relatives. The development of this method meant training the public rather than the profession.

SECTION OF PATHOLOGY AND BACTERIOLOGY.

UNDER the presidency of Prof. E. H. KETT (London) a discussion on the

PATHOLOGY OF ENCEPHALOMYELITIS IN VIRUS DISEASES AND EXANTHEMATA

was opened by Prof. H. M. TURNBULL (London), w dealt principally with post-vaccinal encephalitis. order to discover the exact cause of this conditi several questions, he said, required an answer. Is encephalitis caused by the essential virus of vacci tion lymph, or by some other infection introdu at vaccination, or, does the vaccinal virus excite sc latent infection? Further, if an agent other t the vaccinal virus is the cause, are the histolog results due to a combined action with vaccinal vir Comparative histology was the speaker's chief met of dealing with these questions. In the cases of p vaccinal encephalitis which he had studied hims and in the cases described by others, he had foun remarkable similarity in histological appearances. the naked eye the brains from most of these c showed congestion and œdema with hæmorrhage i the leptomeninges and subdural space. The sp cords contained one or two punctiform hæmorrha and in some cases there was blurring of the lin demarcation between grey and white matter. seven out of eight of the speaker's own cases t were found on microscopical examination f changes extending from the cerebral cortex to lumbo-sacral cord, with maximal lesions in the la situation. In the eighth case affection of the sp cord was greatest in the thoracic segments. Perc had found the most severe lesions in the pons upper medulla, while the maximal cord lesions v in the lower thoracic segments and lumbo-sa enlargement, Schürmann in the pons and medu and Lucksch in the pons and substantia ni Schürmann also found a fairly severe affection of optic tracts and nerves. The speaker had found white matter of the cerebrum more affected than grey, but in the central nervous system as a w the grey matter was more affected than the wl Other describers had made similar findings. A and subacute types were described. In the a type there is infiltration of the meninges with var round cells and endothelial cells chiefly round veins. The vessels are engorged and occasi hæmorrhages occur. In the brain and cord subst there are also small hæmorrhages with congestion, the essential change consists of perivascular marginal zones of demyelination. The perivasc zones form wide "sleeves" which surround vessels for long distances. Such vessels are al always veins. The marginal zones are found r frequently along the edges of the ventral fissur the spinal cord but also occur elsewhere at the phery of the cord. Schürmann found them als several situations in the cerebrum. Under magnification the zones appear sharply defined, within such zones, except at the margins, demye tion is usually complete. Only a fraction of the cylinders survive. The glial fibres immediately ar the vessel are sometimes thickened and give a pos reaction for fibrin. Further from the vessel fibrils form a wide-meshed net and frequently ap diminished in number. The changes in the mar zones are similar, but the speaker had not fibrinoid thickening of the perivascular glial f in these situations. Perdrau had found inci demyelination free from glial cells around n vessels, but in conspicuously affected zones the n glial fibres usually contained a great numbe proliferated glial cells. The bulk of the cells pr have been shown to be microglia and to co myelin and fat. In addition, however, neutr leucocytes occur when inflammation is int Proliferated glial cells extend beyond the demyelin zones and cause a diffuse infiltration in those re which are most severely affected. Infiltration o

ntitial sheaths is an infrequent and incon-uous feature. In addition to the perivascular marginal lesions, Perdrau found isolated and enerated fibres throughout the nervous system. bodies of the neurons are remarkably well erved. There is often clumping of the neuro-matin, but loss of angularity and complete osis are rare. In the subacute type the adventitial ths are distended with large fat-granule cells. perivascular zones of demyelination may be ty and narrow in some cases, whilst in others may coalesce to form large areas. Prof. Turnbull ntained that the changes described are clearly inct from those of poliomyelitis and encephalitis argica, and belong to the group of conditions acterised by demyelination.

his group includes certain examples of the dis-inated myelitis of Westphal, disseminated phalomyelitis of later writers, disseminated rosis, and encephalitis periaxialis diffusa. The ker added that a condition similar to post-inal encephalitis occurs independently of recent ination and observed exanthemata. He cited eral examples described by various authorities. ilar histological changes had been found in the eral nervous system as a complication of exanthe-a. Some of the cases occurring in measles, though ntially similar, present certain differences. There ld be little doubt that similar changes occur in ll-pox and probably after antirabic treatment, occurrence in mumps and chicken-pox was ertain. The cardinal point of difference between se changes and those of acute disseminated sclerosis hat the whole length of a vessel is surrounded by yelination in the former and only a segment in latter. The pathogenic processes in the two ditions, however, are essentially similar and the erent pictures may simply represent modified tions to a single agent. Regarding nomenclature, order to avoid confusion with other varieties of ephalitis, the speaker suggested, in his concluding arks, that the term "disseminated myelitis of the t-vaccinal type" should be applied to the con-ions he had described, thus grouping together ditions having a similar histological appearance.

Prof. J. McINTOSH (London) declared that the non-ulent variety of encephalomyelitis is usually the lt of virus infection. He then dealt in sequence h the manifestations of this condition in various ases. In poliomyelitis the incidence of encepha-is is low, but fatal cases often present slight cerebral ons with scattered areas of perivascular infiltra-n. When the disease is produced in monkeys, the ximal lesions are in the cord no matter how the ction is made. In encephalitis lethargica the main hological lesion is in the basal ganglia of the brain. re is perivascular infiltration, chiefly of lympho-es and plasma-cells. There is also infiltration of the ivascular parenchyma and glial proliferation. The ve-cells are not usually affected. The diseases, he lared, could be transmitted to monkeys, the lesions urring showing great similarity to the natural ction in man. Some experimenters had declared t the lesions obtained were due to spontaneous ephalitis, but Prof. McIntosh maintained that the ons he had obtained were similar to those in man, t quite different from the lesions of spontaneous ephalitis in animals. He next drew attention to ction of the nervous system in small-pox. He cribed in some detail the appearances presented the brain of a child who developed cerebral ptoms after a mild attack of small-pox. Histo-ically the lesions proved to be very similar to those post-vaccinal encephalitis, the features of which been dealt with by Prof. Turnbull. The incidence ncephalitis following vaccination was now generally nitted, continued the speaker, the condition mani-ing itself 10 to 14 days after vaccination. Dealing h the ætiology of post-vaccinal encephalitis, Prof. Intosh summarised the histological findings in this dition and maintained that they constituted a v pathological entity, in which the lesions are distinct from those in poliomyelitis and encephalitis lethargica. In order to prove that the vaccinal virus is responsible for the condition, it is essential that lesions of a closely similar nature should be produced by animal inoculation. Material from the central nervous system of cases of vaccinal encephalitis when injected intracerebrally produced only little disturbance. These negative results, it was considered, demonstrated the absence of the virus of encephalitis lethargica and poliomyelitis. Using vaccinal virus itself for inoculation, intracerebral injection into rabbits produced a fatal encephalitis, but there was great difficulty in carrying out a sequence of inoculations from one animal to another with positive results. Levaditi had prepared a highly virulent strain called neuro-vaccine which could be successfully carried from one animal to another. A similar strain had been prepared by Prof. McIntosh. The brains of animals thus treated showed definite encephalitis, extensive meningeal lesions, and sometimes indications of perivascular demyelination. Further, intravenous injections of these virulent strains of vaccinal virus produced changes in the internal organs similar to those occurring in fatal cases of post-vaccinal encephalitis. These lesions are focal areas, whitish in colour, and about the size of miliary tubercles. They differ from tubercles in showing more evidence of fibrosis. No tubercle bacilli could be demonstrated in the lesions and they were regarded as granulomata resulting from multiple foci of some virus. From these experiments it has been concluded that the vaccinal virus is the cause of post-vaccinal encephalitis. Encephalitis, continued the speaker, has been recorded in cases of chicken-pox, measles, and mumps, but such a complication is extremely rare. In the case of chicken-pox, clinical records show that symptoms suggesting involvement of the nervous system occur from time to time, and in the literature some dozen cases of encephalomyelitis have been described. Recovery in most cases was complete in a few weeks. Fatal cases of chicken-pox are so rare that no histological details are available. Nervous involvement in measles and mumps is still more rare. Two cases of encephalitis complicating measles have been described by Wohlwell, who regarded them as showing a close resemblance to the lesions of post-vaccinal encephalitis. Encephalitis in typhus fever is a constant feature and may be regarded as part of the disease process. Microscopic examination reveals the constant presence of lesions of the central nervous system and internal organs. In general the encephalitic lesions resemble those of variolar and post-vaccinal encephalitis. The pathological changes consist essentially of proliferations of large clear cells into the surrounding nervous tissue, with infiltration of inflammatory cells. In some lesions the cells are compact, while in others the perivascular outgrowth is diffuse. The proliferated cells are generally considered to be glial in origin, but Wollbach and his co-workers are of the opinion that they are mesoblastic and derived mainly from the blood-vessels. As a rule, gross lesions are not visible to the naked eye, and the meninges show only a slight inflammatory reaction. Typhus has been experimentally transmitted to monkeys by intraperitoneal injections of blood from infected cases, and to guinea-pigs by injection of pathological tissue and lice from human cases. The virus can be carried from guinea-pig to guinea-pig indefinitely. Lesions identical with those in man were found in the central nervous system of these animals. Prof. McIntosh, in summarising, said, non-suppurative myelitis can occur in a number of virus infections, in particular poliomyelitis, encephalitis lethargica, small-pox, vaccinia, chicken-pox, measles, mumps, and typhus fever. He stated that the encephalitis may occur as part of the disease process or as a complication, and investigations of these conditions show that a histological picture of a certain type can be assigned to each. Doubtless, he said, further studies will bring forward additional new types, as the differential features are better understood. The characteristic histological appear-

ances of encephalitis lethargica and post-vaccinal encephalitis, together with the fact that lesions comparable with those found in natural disease can be reproduced experimentally in animals by the inoculation of virus containing material, is strong evidence that the encephalitis is actually produced by the infecting virus in each of these two conditions.

Dr. J. G. GREENFIELD'S paper was read in his absence by Prof. HADFIELD. He dealt with encephalomyelitis in measles and pointed out that this complication appeared to be increasing in recent years. He described in some detail the post-mortem findings in a girl of 9 years in whom there developed convulsions, high temperature, and coma four days after the measles rash had appeared. The similarity of the findings to those in post-vaccinal encephalitis were demonstrated.

Dr. S. P. BEDSON considered some aspects of the experimental side of the problem. He pointed out that the virus of herpes febrilis should be carefully considered in dealing with nervous manifestations in virus diseases. This virus has been considered by some authorities to be the causal factor in encephalitis lethargica, such view being based on the isolation of the virus of herpes febrilis from such cases. In encephalitis lethargica, however, no skin lesions occur. Dr. Bedson claimed that an antibody is developed in herpes infection, but he could find no such antibody in encephalitis lethargica. The herpes virus is highly neurotoxic in rabbits, and further, spontaneous encephalitis also occurs in these animals. Great care is therefore necessary in interpreting results.

Prof. G. HADFIELD (London) described the appearances in a case of post-vaccinal encephalitis. He had also studied in detail the nervous system of four children who had died from accidental causes shortly after vaccination. In these cases no changes were found. The histological picture in the encephalitis case corresponds with that of other workers. The importance of investigating the condition and reaction of the neuroglia was emphasised. The histological picture in post-vaccinal encephalitis seems to be standard but not specific because of similarity in measles and small-pox. In early lesions of disseminated sclerosis there is histological similarity to the above lesions, but the clinical features suggest a different ætiology.

Prof. J. H. DIBLE (Cardiff) expressed considerable doubt on the interpretations of experimental work in encephalitis lethargica. He said that in the rabbit the positive results obtained were inextricably mixed up with the herpetic virus. If herpes and encephalitis virus are the same thing then it exhibits different properties in human and rabbit brains. It is impossible to produce keratitis with fresh material from encephalitis cases, but when encephalitis has been produced in rabbits the virus recovered from the brain will produce keratitis. Clinically, encephalitis rarely or never presents herpes. Herpes is common in pneumonia, but cerebral affection is absent or rare in this condition. Prof. Dible, Flexner, and others had failed to infect rabbits with encephalitis lethargica. Flexner had also failed to infect monkeys. Those who have produced apparently positive results show marked disparity in the time of incidence, and it is difficult to believe that one and the same virus could exhibit such eccentricities. The speaker expressed doubt that the condition of encephalitis lethargica has ever been transmitted to animals.

Prof. J. CRUICKSHANK (Aberdeen) drew attention to the incidence of herpes infection in bacterial diseases, and sought information on the incidence of encephalitis in such cases. He further described an interesting happening in which a stock of calf lymph which was used without ill-effects in Spain, when used in Holland produced a number of cases of post-vaccinal encephalitis. Was this the result of a dormant virus being stimulated?

Prof. MCINTOSH, in reply, said he was quite satisfied that the lesions he had obtained were not those of herpes febrilis or spontaneous encephalitis.

The PRESIDENT summed up the discussion wh he said, had brought out clearly the fact that a f of encephalitis was definitely associated with vacc tion. Whether the vaccine was the actual caus the encephalitis or whether it served merely to l up an already existing latent infection was important from the practical standpoint. If one assaulted another with a fatal result, the fact that victim might not have died had he not suffered f heart disease would not save the assailant f punishment. Similarly, vaccination could not held blameless even if it only lighted up a la infection. The existence of cases of encepha following vaccination was now established, official figures as to the proportion these cases bor the total number of vaccinations performed were available. Since allusions to the complication frequently appeared in the lay press, he had hc that the discussion would have brought out s information on this point, so that the medical pr sion would be in a position to reassure the publi

An interesting exhibition of pathological specin was on view at University College throughout Association's meeting.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEAL

THE following table gives some 1927 stati of five Lancashire districts :—

Name of district and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-r per 10 births	
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.
Blackburn C.B. (124,500)	13·7	14·9	0·88	1·28	4·0	2·2	77/37	7·0
Bolton C.B. .. (178,300)	15·1	13·8	1·04	1·32	3·2	1·9	75/36	7·4
Bury C.B. .. (56,770)	13·7	14·3	1·02	1·35	3·8	2·3	79/35	5·1
Eccles B. .. .. (45,390)	15·6	12·7	1·06	1·65	2·3	2·2	61/24	4·2
Swinton and Pendlebury U.D. .. .. (34,750)	12·2	10·0	0·86	1·14	2·0	1·4	75/40	2·3

C.B. = County Borough. B. = Borough.
U.D. = Urban District.

Blackburn.

Dr. Oscar M. Holden reports a sunless year an abnormal rainfall—958 hours of bright suns recorded at the corporation hospital as comp with 1114 in 1926, and 43·3 in. of rain as comp with 40·9 in. Dr. Holden thinks the extent o clay drifts has some bearing on the prevalenc the rheumatic affections, which are a promi feature in the sickness records. The year was o depressed industrial conditions with much u ployment in the town's chief industry of co weaving and its subsidiary branches. The popul of Blackburn reached its zenith in 1914, and in for the first time since the war, the deaths exce the births—namely, by 162.

The respiratory group of diseases bulks largely in the death returns of the town, and predominant causes suggested are unfavou climatic conditions coupled with a dirty atmosp Deaths due to respiratory diseases are marl

greater among cotton operatives than among the general population at all age-periods. The tuberculosis death-rate shows very little change. Only a very small proportion of the contacts avail themselves of the facilities afforded by the tuberculosis dispensary. It is not practicable with the present staff to arrange for home examination of contacts, but the coöperation of private practitioners would be very valuable in this branch of work. There is great need for adequate after-care for cases of pulmonary tuberculosis.

The antenatal clinic was attended by 480 prospective mothers, the total births being 1702. Dr. Holden is disappointed with the number of patients sent to the clinic by the midwives, who attended 81 per cent. of the confinements during 1927. He further points out that no improvement has been brought about by the recent requirement of the C.M.B. that practising midwives should carry on antenatal work or (if they feel unable to do so) send their patients to the antenatal clinic. In 1925 7 per cent. of the cases attending the clinic were sent by midwives, in 1926 12·3 per cent., and in 1927 11 per cent. The maternal mortality is high, the figures for the last six years being 6·8, 6·7, 5·0, 5·7, 8, and 7·6. The stillbirth-rate for 1927 was 5 per cent. The Springfield Maternity Home has accommodation for 20 cases and is recognised as a training hospital for pupil midwives. The medical officer of health has power to remit the minimum fee of 1½ guineas per week in cases of proved necessity, and there is no reason why any mother, whose home surroundings are unsatisfactory, should not avail herself of the facilities and comforts of the home. Nevertheless the home is not used as much as it might be. There were only 220 cases admitted during 1927, of whom six were for antenatal supervision. From 400 to 500 cases could be readily accommodated.

The death-rate from respiratory diseases among the pre-school children was especially high owing to outbreaks of measles and influenza during the first quarter. Although there has been a distinct fall in the infant mortality-rate since 1920, the death-rate in the 1–5 years group shows no such tendency. Blackburn is more fortunate than most industrial towns in its housing conditions. There is no real slum property and no universal overcrowding, the average rooms per person being 1·1. And yet there is a long list of applications for corporation houses, occasional overcrowding caused by subletting, and a growing tendency for tent sheds and caravans to be used as substitutes for houses.

Bolton.

Dr. C. W. Paget Moffatt reports that for the first time since 1922 the Registrar-General has estimated an increase in the population of Bolton, which makes it nearly as high as it was in 1909—viz., 178,667. The scheme for the substitution of water-closets for privy middens has slowed down owing to difficulties as to sewers and prospective demolition of property. Bolton is coöperating with the Manchester regional smoke-abatement committee. The intention is to have the same by-laws in all the areas of the region, but up to now the regional committee has not been able to formulate by-laws acceptable to the Ministry. There are 226 factory chimneys in Bolton, and Dr. Moffatt thinks there will be no real abatement of the smoke nuisance in industrial areas until soft coal is replaced by smokeless fuel, and that a great deal will be accomplished in this direction before long. By-laws are needed for houses let in lodgings. Strenuous efforts are being made to reduce the nuisance from vans. At the close of 1927 there were 42 living vans as compared with 73 at the close of 1926. Most of the slaughtering in Bolton is done in private slaughter-houses owing to the fact that the public abattoirs are too small and out of date. The new houses erected were 510 municipal, 490 subsidised houses by other persons, and 81 unsubsidised, a total of 1081. Overcrowding is not prevalent and the number of inhabitants per house has decreased steadily from 4·64 at the census of 1901 to 3·86 in 1927. Forty-seven houses were demolished during the year.

The meat regulations have brought about a marked improvement in the handling of meat, but attention is drawn to the very insanitary practice of leaving the feet on the dressed carcasses of lamb and mutton. The frequently filthy condition of the feet is liable to cause dangerous contamination of the meat.

About three-fifths of Bolton's milk comes from 2700 cows stalled in the borough; one-fifth from outside farms is pasteurised by the Coöperative Society; and the remaining fifth comes from other outside farms. The "inside" cows are regularly inspected by the veterinary surgeon, who is usually accompanied by a sanitary inspector to look after the hygienic condition of the dairy farm. As the result of routine veterinary inspection, 6 cows giving tuberculous milk were found and slaughtered. The cows slaughtered under the Tuberculosis Order numbered 32, of which 9 had tuberculosis of the udder, 1 was giving tuberculous milk and had other tuberculous lesions, 6 showed tuberculous emaciation, and 16 had chronic cough and definite signs. One farmer was fined £5 for failing to notify a cow suffering from tuberculosis of the udder.

Dr. Moffatt shows that Bolton is doing everything recommended by the Ministry for the prevention of maternal deaths, but expresses his opinion that a real improvement in the training and status of midwives is needed. A longer and more thorough training would help to exclude from the profession those who adopt it, not as their real life's work, but as a means of adding to the family income.

Bury.

Dr. G. Granville Buckley says that the scheme for the conversion of privies into water-closets has made rapid progress, but that there are about 450 which cannot be dealt with as there is no sewer available. The sewage disposal works have three systems following the sedimentation tanks—namely, single-contact beds, percolating beds, and the activated sludge process. During 1927 six samples of the joint effluent were satisfactory and two slightly unsatisfactory, as judged by the inspectors of the Mersey and Irwell Joint Committee. The public abattoir is modern in every respect. Of the carcasses, bulls were affected with tuberculosis to the extent of 2·5 per cent.; oxen, 0·21 per cent.; cows, 10·25 per cent.; heifers, 0·55 per cent.; and pigs, 4·22 per cent. The infant deaths numbered 62, and there were 34 deaths of children between the ages of 1–5. Of the three deaths making up the maternal mortality one was due to puerperal fever, another to "septic abortion followed by peritonitis and septicæmia set up by douching in an attempt to procure abortion," and the third to "septic abortion following on accidental abortion. Peritonitis (general)." There was a fourth maternal death of a woman, who had attended the antenatal clinic and who developed kidney trouble the tenth day after labour.

Eccles.

Dr. J. E. Spence points out that there were no deaths of children aged 1 to 2 years from gastro-enteritis in 1927, but that 13·3 per cent. of the deaths at this age-period since 1914 have been due to this cause. The fall in mortality at the age-period 2 to 5 has not been regular, but shows fluctuations caused by the respiratory diseases. Since 1914 28·1 per cent. of the deaths in this age-group have been due to bronchitis and pneumonia, 15·9 per cent. to measles, and 8·4 per cent. to whooping-cough. The child welfare work and school medical work is closely coördinated. Each health nurse attends the centre on one afternoon a week and, as far as possible, the mothers in her area come on that afternoon. Each child during its first year is seen by the nurse on

an average 29 times, during the second year 8·9 times, and during the third year 4·8 times. The supervision continues during the 3–5 age-period, when about half the children attend school. Early treatment of the pre-school child for squint, dental trouble, and other ailments is thus made possible. "Ultra-violet" treatment is provided at Barton-upon-Irwell Hospital for rickets and debilitating conditions, but Dr. Spence is not greatly impressed with its value, if separated from other hygienic measures. There is a difficulty in getting the "lazy, indolent mother" to persevere with any treatment for rickets, as she trusts to the deformities disappearing without treatment and does not appreciate that the deformity is only one effect of the disease. The water from the two swimming baths is filtered through Bell's filters. The men's bath was closed for repairs after the water had been in use from January, 1923, until Oct. 31st, 1927. During the whole of this period the chemical and bacteriological examination of this water was satisfactory. The women's bath is chlorinated as well as filtered, but the analysis taken on Sept. 20th shows more chlorine in the water of the men's bath than in that of the women's. Notwithstanding the extensive provision of municipal houses, there are too many houses occupied by more than one family, and many cases of hardship therefrom. The rent charged to the lodging family in many instances exceeds the rent of the whole house. During the year 19 municipal houses, 34 subsidiary houses, and 3 houses of a larger type were erected, while 24 houses were demolished. Ninety municipal houses are nearing completion, and the corporation are considering a scheme for 68 more. There are 800 families which still require to be housed and there are no signs of the shortage of houses being overtaken.

Swinton and Pendlebury.

Dr. H. C. Mulholland, who is also school medical officer and certifying factory surgeon to the urban district, says the staff engaged upon orthopædic, dental, and aural work for the schools does similar work for the maternity and child-welfare centres. The district, except in a few outlying cases, is on the water-carriage system. The sanitary inspectors have been sent for a course of special training in dairying. A table shows that out of 52 routine samples of mixed milk, tested by biological methods, nine contained tubercle bacilli. Systematic veterinary inspection of the farms has been in force since 1924, and the veterinary surgeon is accompanied by the sanitary inspector, who sees to the sanitary condition of the dairy farms. The council has adopted the limit of 2 minutes in the half hour for black smoke, and legal proceedings were successfully taken and fines inflicted during the year in three instances. Since 1920, 32 cases of encephalitis lethargica have been notified, including one doubtful case in 1927. The present condition is that 8 have died, 17 are severely ill, 4 are slightly ill and fit for light work, and 3 are apparently normal. There was no evidence that case-to-case infection, insanitation, or overcrowding were causal factors. The health visitors have undergone a short course of training at the Manchester Royal Eye Hospital on the nursing of ophthalmia neonatorum. The four cases notified in 1927 all made a complete recovery. One urinary typhoid carrier resident in the district is kept under observation, but did not give rise to any cases in 1927. There were 709 births, and 81 expectant mothers attended the antenatal clinic, which is conducted by a consultant. Caravans tend to increase in the district, and the occupants are usually dependent upon neighbours for water and sanitary conveniences. There are just over 5000 working-class houses in the district, and 309 of these houses are overcrowded. Houses needed are estimated at 510, 210 for the unsatisfied demand, and 300 to provide for the demolition of insanitary property. No council houses were completed during the year, but 182 are in course of erection.

INFECTIOUS DISEASE IN ENGLAND AN WALES DURING THE WEEK ENDED JULY 21ST, 1928.

Notifications.—The following cases of infectic disease were notified during the week:—Small-p 173 (last week 177); scarlet fever, 1528; diphther 900; enteric fever, 54; pneumonia, 706; puerpe fever, 43; puerperal pyrexia, 94; cerebro-spinal fev 7; acute poliomyelitis, 5; acute polio-encephali 4; encephalitis lethargica, 21; dysentery, 3; op thalmia neonatorum, 130. No case of cholera, plag or typhus fever was notified during the week.

The cases of small-pox were notified from the follow 19 counties:—London, 9; Buckingham; 1; Derby, 1 Durham, 53; Essex, 3; Huntingdon, 1; Kent, 1; L caster, 5; Northampton, 1; Northumberland, 12; N tingham, 2; Soke of Peterborough, 2; Stafford, 11; Surr 1; Yorks East Riding, 3; North Riding, 12; West Ridi 24; Glamorgan, 13; Monmouth, 7.

The number of patients in the Infectious Hospitals of Metropolitan Asylums Board on July 24th–25th was follows:—Small-pox, 23 under treatment; scarlet fe 1771; diphtheria, 1849; enteric fever, 19; measles, 3 whooping-cough, 196; puerperal fever, 18 (plus 12 babie encephalitis lethargica, 67; poliomyelitis, 2; "ot diseases," 22. At St. Margaret's Hospital there w 21 babies (plus 11 mothers) with ophthalmia neonatorum

Deaths.—In the aggregate of great towns, includ London, there was no death from small-pox, 5 from enteric fever, 28 (5) from measles, 5 (3) fr scarlet fever, 20 (1) from whooping-cough, 26 from diphtheria, 36 (9) from diarrhœa and enter under two years, and 21 (2) from influenza. The figures in parentheses are those for London itself.

The four fatal cases of enteric fever outside London were reported from Southampton, Sunderland, and Newcastle-Tyne (2). Of the 23 fatal cases of measles outside Lond 6 were reported from Liverpool. Of the 19 cases of who ing-cough outside London, 3 were reported from Birmi ham. In the same week Glasgow reported 6 and Belfas Belfast also had 6 fatal cases of measles. The deaths fr diarrhœa are still diminishing.

The number of stillbirths registered during the w was 270 in the great towns (corresponding to a r of 38 per 1000 births), including 53 in London.

Deaths from Small-pox.—A supplementary monthly statement shows that the returns for the month June included, in addition to the deaths alre shown in the Weekly Return, 6 deaths certified as due to small-pox either as principal or contributory cause. These deaths were assigned to the follow areas:—Ilfracombe U.D., 1; King's Lynn M.B., Thame U.D., 1; Keighley R.D., 1; and Gelli U.D. (Glam.), 1.

HERTFORD BRITISH HOSPITAL, PARIS.—The K and Queen have given their patronage to this hosp which was founded during the seige of Paris in 1871 by late Sir Richard Wallace. In 1879 Sir Richard erect new building which his widow handed over to the Br Government. The British Ambassador in Paris for time being is the honorary president. The hospit situated at Levallois-Perret, outside the fortifications, has 46 beds.

EXTENSION OF LEEDS GENERAL INFIRMARY.—Particulars are now available of the proposed large exten of this institution which, together with the discharge o bank overdraft, will cost £250,000. There is to be a p patients' block of three floors in which patients will some 5 to 7 guineas a week, according to the degr privacy enjoyed. It is hoped that this block will he remove the difficulties caused by the rapid growth of accident cases which are costing the infirmary £4000 a while the donations traceable to those concerned amou less than £100. Another block, which is to be built will provide for another 100 non-paying patients waiting-list has rarely less than 1000 names. The bui of these two new blocks will increase the total ac modation of the infirmary itself and the branch Cookridge from 632 to 800 beds. The present av annual deficit is £25,000 and the extensions will increas cost of maintenance from £104,000 to £120,000 a year

Special Articles.

MEDICINE AND THE LAW.

eath Certification: Date of Certifying Practitioner's Last Visit.

THE primary purpose of the coroner's inquest is o of public safety—the detection of foul play, and c sequently the prevention of crime. The result of t amending legislation of 1926 was to interlock the l relating to coroners and the law relating to the c tification of death. It now is, or should be, as d icult as human foresight can make it to conceal a d th or to dispose of a body without adequate o cial knowledge of the circumstances of the death. I also is, or should be, as difficult as human fore- s ht can make it to dispose of a body by burial or c mation when death has not in fact taken place. T ese safeguards for the public have naturally not b n evolved without enacting an elaborate code of s tutes and regulations. There is some reason to t nk that medical practitioners, on whose coöpera- t n the whole system depends, are not yet fully a are of the new legal position. The Registration t of 1926 provided for a "prescribed" form of c tor's death certificate, and the form thus pre- s ibed requires the doctor to state when he last s w the patient alive. Part IX. of the new r gulations—the Registration (Births, Stillbirths, D aths and Marriages) Consolidated Regulations 1927—is headed, "References to Coroner a d Registration after Reference—Stillbirths and D aths." One of the occasions on which the registrar u st report to the coroner before registering a death i where "it appears to the registrar from the parti- l lars contained in the medical certificate or other- w se that the deceased was seen by the certifying m dical practitioner neither after death nor within 1 days of death." Those who are apprehensive of t e risk of a person being buried alive will reckon t is regulation as intended to avert that danger as w ll as to lessen the chance that death might be c used by violence or poisoning in the interval b tween the practitioner's last visit and the date of d ath.

At a recent inquest, held in Southwark by Dr. . J. Waldo upon the death of a woman aged 81, t e coroner explained that the case had been reported t him by the registrar under the regulation already c ted. It appeared that the medical practitioner h d certified death to be due to natural causes, and t at his last attendance had been seven weeks before t e date of death. In these circumstances the coroner o dered a full post-mortem examination by an inde- p ndent pathologist, and requested the attendance o the certifying doctor at the inquest. The patho- l gist's evidence agreed with the certificate, and thus t e inquest merely confirmed what was already upon r cord. In answer to the coroner the pathologist a reed that, without careful expert examination of t body, it was not safe to assume that death had a tually taken place. He cited an instance where t e police had recently called him in to examine a y uth in a state of catalepsy. The patient appeared d ad but, on examination, a feeble pulse beat was f und in spite of commencing rigor of the muscles o the jaw, absence of eye reflex, and dilated pupils—t ree characteristic signs of death; appropriate t eatment ended in recovery. Dr. Waldo, in sum- m ing up, described the state of the law in connexion w th death certification, registration, and disposal of t e dead as unsatisfactory and dangerous. It was, he s id, of vital importance to the public that the view a d external examination of the body by the certi- f ing doctor should be made compulsory before b rial. Such a course would be a safeguard against a y possible false assumption of death. Dr. Waldo's p int is that a statutory period of 14 days, without a y further view of the body, is neither a safeguard against premature burial nor a trustworthy precaution against the non-detection of foul play. He would have the present law amended in the following three respects: first, compulsory view of the body by the certifying practitioner who attended the deceased (with payment of a small fee for such duty) prior to registration of death by the local registrar; secondly, registration without report to the coroner, provided the certifying doctor had last attended his patient within 14 days of death and had also viewed the dead body; thirdly, statutory notification by the registrar to the coroner of all deaths of patients not seen by the certifying doctor within the 14 days period, to be followed by public inquest.

It is probably a surprise to some practitioners to find that coroners can, and do, order post-mortem examination and inquest where the certifying doctor has not seen the deceased within 14 days of death. Each case must be judged upon its own set of facts, and it may well be that one coroner would not take the same view of his responsibilities as another. Whether the law will soon be changed is doubtful. Parliament has only lately hammered out the new changes, and the arguments for different changes were fully discussed when the present ones were adopted. Sir Kingsley Wood, replying to a question by Mr. T. E. Naylor, M.P. for Southwark, in the House of Commons on July 11th, held out no prospect of further legislation at present.

A Point in the Coroner's Law.

A coroner asks a practitioner for certain information as to the cause of death of a deceased person to enable him to decide whether or not he will hold an inquest. The information desired in this case was technical both as to fact and opinion, and was given out of professional knowledge and experience. On consideration of the information the coroner decided to hold no inquest, and having held no inquest he paid no fee. Quite amicably, the doctor and the coroner have sought our opinion, or reference to any opinion that has been previously expressed in similar circumstances. The doctor considers that a fee is due to him, and the coroner, allowing the justice of the claim, replies that he has no power under the law to satisfy it.

It seems to us clear that the doctor should be paid, and equally clear that the coroner should not be at the expense of a fee for which he would be surcharged. A sentence in the Statute would suffice to meet the case, but changes in an Act of Parliament are not readily brought about; and while the situation may occur with sufficient frequency to suggest a demand for legislation, it is not clear to us that the existing position is not preferable. The doctor who supplies the coroner with the needful information is relieved of a responsibility to give medical evidence, and many practitioners would welcome this, while the relatives are spared a procedure that they always dislike unless they have reason for promoting an inquiry. In all such cases the coroner would know the feeling of the family and would hold the inquest. One natural source for the fee would be estate of the deceased, if there were any estate, but executors could not be bound to admit the doctor's claim.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Settlement of a Conflict Between the Profession and a Sick Club.

WITHIN the last few weeks a serious conflict arose between the entire medical profession in Vienna and the vast organisation called the Sickness Insurance Club for Civil Servants. This latter has about 280,000 members, and had hitherto offered free choice of practitioners to its members. Recently the administrative body of this club has tried to remove the bulk of the profession from the free choice list; doubtless the intention was gradually to substitute

for the free choice system—advantageous both to the profession and the patients, but not to the administrative body—a system of appointed doctors responsible only to the board of the club. As the remonstrances of the medical representatives were useless, from June 11th all medical work for the club was refused, and the members were received only as private patients. They were, however, entitled to demand compensation and a refund of the fees paid to the sick club. This led to troublesome conditions for all parties concerned, but mostly for the managing board, so that after some three weeks it was found more convenient to arrive at an understanding. The arrangement provides that in future the board of the club will not seek to introduce innovations of any kind pertaining to therapy without the consent of the medical representatives; the extent of specialist service to be available will be controlled by a board chosen equally by the club and the profession. Some minor problems were settled at the same time, in a sense favourable to the practitioners, so that this strike—the first instance of a medical fight on the lines of trades-unionism in this country—can be looked upon as having ended in favour of the doctors.

Decapsulation of the Testicle as a Means of Rejuvenation.

Intense public interest seems to be aroused by any suggested methods of regaining lost youthfulness. Prof. Ullmann (Vienna) has now published his observations on the method of "decapsulation," practised by him since 1915, but hitherto unpublished. He has had the opportunity of making transplantations of testicles in cases of ectopia testis, and of examining such cases after a few years. In each case new blood-vessels had formed, but only if the transplantation took place in individuals belonging to the same blood group or a related one. Otherwise the transplanted organ was gradually absorbed. This he holds to be the fate of the testicles transplanted from monkeys or other animals (Voronoff). In such cases transplantation acts only as a stimulus, like a non-specific protein injection. Ullmann claims now that the safest and most reliable method of producing lasting hyperæmia—and thus a hyperproduction of the hormones—in the testis is to decapsulate it and thus offer it means to expand, since the primary reason for diminished function of the testes is, according to him, the increasing intra-testicular pressure with lessened blood-supply, due to sclerotic processes. Prof. Ullmann lays stress on the fact that, in 1915, when the problem of blood-group relation was unknown, transplantation was applied in a wrong way, and that now his method, which is very simple, should be tried in suitable cases.

Resignation of Prof. Wagner-Jauregg.

The well-known neuro-pathologist and latest recipient of the Nobel prize for medicine, Prof. Wagner-Jauregg, has resigned his post as chief of the clinic for neurology and psychiatry in Vienna, having attained the age of 71. His farewell lecture, held a few days ago, was marked by a number of farewell speeches from his pupils. The professor himself completed his task by delivering a splendid lecture on the treatment of tabes, after which Prof. Redlut and Dr. Poetzl, on behalf of the former and the present pupils, spoke of the importance of his contributions to the advance of neurology, notably in the prophylaxis of thyroid enlargement and the malarial treatment of general paralysis of the insane and tabes dorsalis. The office of Wagner-Jauregg will be filled shortly either by Prof. Economo (Vienna), well known for his researches on encephalitis lethargica, or by Prof. Poetzl (Prague), the first-named being regarded as the more likely candidate.

Statistics Concerning Suicides in the Half Year 1928.

The public records for the first half of 1928 show that 1528 persons attempted to commit suicide in Vienna, of whom 507 attained their object. These figures show a marked and constant increase in comparison with the years before the war and the period immediately following it, the number of attempts being double those recorded in 1917. It is remarkable that while the same number of men and women tried to kill themselves, only 199 women succeeded in doing so, against 308 men. As regards the causes of suicide, 287 (106 of these were men) tried to destroy their lives for family troubles; 73 (165 men) because of poverty, 160 (80 men) on account of incurable illness, 160 (55 men) an account of love affairs, 130 persons (78 men) were insane; 41 men and 5 women despaired of their financial position or outlook, 17 men and 22 women were prompted by severe family loss. In 433 cases (221 men) the reasons were unknown.

American Post-graduate Students in Vienna.

This summer, as usual, a large number of American doctors have made our university their temporary home. In the last week of June a group of over 60 doctors, under the leadership of Prof. George MacKenzie, of Chicago, have been here, having arranged beforehand to attend a number of special courses in the clinics of Profs. Neumann, Hejek, and Masschik (oto-rhino-laryngology) and Profs. Meller and Lindner (ophthalmology). These classes will last six weeks each, and will occupy ten hours daily, so that each student will obtain 300 hours of instruction. These zealous post-graduate students, in order to fit themselves to make the most of the instruction provided, attended classes conducted by Prof. MacKenzie, as an introduction to oto-rhino-laryngology and ophthalmology. Post-graduate courses in Vienna are much favoured by the Americans; already more than 300 have put down their names for courses in the session 1928–29. A special American Medical Association of Vienna controls and organises these courses, which are held in English.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Venereal Diseases.

IN Dr. William Robertson's report on the health of Edinburgh in 1927 reference is made to venereal diseases and to the House of Common's refusal of a second reading to the Corporation Bill. The report notes that certain forms of disease are on the increase despite all that has been said and done to educate the public. It is unfortunate that moral and social questions have been introduced to hamper us in our efforts to control the spread of these dangerous infections. Venereal diseases are much more serious than other maladies because, if incompletely treated, they may have disastrous after-effects. It would because we are aware of the serious consequences to the individual and to future generations that we desired to secure a better control of the disease in its different forms and phases. We may as well cease for the moon to come down to earth as expect to get the better of venereal diseases by voluntary methods. The great majority of infected persons will continue to present themselves for treatment, but unless we have the power to compel those who are indifferent, careless, or obstinate to rid themselves of the disease we must expect to find a continuation of mental deficiency, affections of the nervous system, miscarriages, as well as chronic and often indefinable ill-health among men, women, and children. Our effort has been arrested by dialectics. Those who have experienced the difficulties and understand the problem from actual contact with it have been seriously discouraged though not disheartened.

The Slaughter of Sheep.

A report on the investigation carried out in Edinburgh on June 14th has now been issued by Prof. Henry Dryerre, Professor of Physiology at the Roy

k Veterinary College, and Dr. J. D. S. Cameron, ysician to the Royal Dispensary. They state t 60 sheep were provided, and at their request the ggested methods of slaughter were amended and lered as follows: (1) sticking and checking, 20 ep; (2) shooting and sticking, 20 sheep; (3) oting and sticking, and breaking of the neck, 10 ep; (4) sticking and checking, 10 sheep. In the ermination of when consciousness was lost, they ed their conclusions upon the disappearance of tain cerebral reflexes. They give it as their nion that shooting and sticking is much to be ferred to sticking and checking, from the humani- ian point of view and, further, that after shooting, humanitarian benefit is derived from checking or k-breaking. They realise that sticking is necessary m the utilitarian point of view, and no objection be taken to this procedure, on the grounds that oduces pain, if shooting precedes it.

The Scottish Health League.

A meeting of the provincial council of the Scottish alth League was held recently in Glasgow, with of. Carstairs Douglas in the chair. A large and resentative General Council was elected, including ny well-known members of the medical and dental fessions, together with 94 medical officers of lth throughout Scotland. Colonel P. S. Lelean, fessor of Public Health in the University of nburgh, was elected chairman, and Dr. A. K. lmers, vice-chairman of the General Council, with David McKail hon. secretary. The following ecutive Council was elected: Dr. M. Adams McVey, .S., Dr. Thomas Adam, Dr. G. G. Buchanan, Agnes Cameron, Mr. J. Menzies Campbell, L.D.S., A. K. Chalmers, Prof. Carstairs Douglas, Dr. C. Scott Dow, L.D.S., Dr. James Kerr, Prof. S. Lelean, Dr. G. W. McIntosh, Dr. David McKail, G. V. T. McMichael, Dr. J. Hume Patterson, D. L. Radford, L.D.S., Dr. G. Y. Richardson, T. Lauder Thomson, Dr. Margaret Tod, and Dr. lmers Watson.

he Council intends to form an advisory council, health societies and social organisations operating Scotland have been invited to nominate repre- tatives. It has been decided to inaugurate nches of the League throughout Scotland, and it oped that all interested in the dissemination of wledge upon healthy living will coöperate with Council.

Larbert Colony Scheme for Adult Mental Defectives.

he directors of the Royal Scottish National itution, Larbert, are appealing for support ards the colony now being established at Larbert ate for the whole-life care of adult mental defec- s. For the last 65 years the Royal Scottish ional Institution has provided a home, care, and ning for mentally defective children, of whom e are at present over 500 in the home; but these dren have to be discharged on arriving at the of 16 or 20. The directors emphasise the dangers h this involves both for the mentally defective nselves and the community. The colony scheme been adopted by every other progressive country, has not hitherto been attempted in Scotland.

Students' Attitude to Charity.

dinburgh students have recently been considering oposal that they should run a "Charities Week" heir own instead of merely helping the organisers he Royal Infirmary pageant on Infirmary Day. suggestion, which was discussed by the students' esentative council, has not met with general oval. Such efforts are made annually in Glasgow Aberdeen, and they have hitherto met with t success. In deciding not to follow the example he students of these two cities, the Edinburgh ents were of opinion that the idea of collecting harity was being carried too far. In Glasgow, instance, the students started quite modestly. they always set themselves out to beat their previous total, with the result that the campaign is now gigantic, and they find themselves committed to a big piece of organisation. Necessarily they have only a limited amount of spare time. It is no longer an enjoyable rag, but a serious, arduous campaign, with months of preparation. Again, in Glasgow and Aberdeen the infirmaries do not organise pageants of their own as is done in Edinburgh, and the concerted effort of the students is the only one of the year in these cities.

The students will, of course, continue to do their best on Infirmary Day.

The Trend of Medicine.

The place which the physician has held in the world in the past and the place which he is likely to hold in the future were touched upon by Prof. William Wright Smith, in the course of an address at the summer graduation in medicine at Edinburgh University on July 18th. The trend of medicine, he said, was to the prophylactic. In the plant world it had been realised long ago that cure was at best difficult—prevention was the aim. How would these changes affect them in the public eye? We were still far, perhaps, from the institution of a scientific medical police. But would the tendency be for the medical man to become more and more of an official? Officials were not loved. But as long as the ethical obligations, so characteristic of the past, continued on the same high level, the favourable status of the profession was assured.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. D. G. Addison-Scott is placed on the Retd. List with rank of Surg. Capt.

Surg. Comdr. T. C. Patterson to *President*, for Medical Dept., temp.

ROYAL NAVAL VOLUNTEER RESERVE.

Prob. Surg. Lts. R. Pedlow and W. T. Donovan to be Surg. Lts.

ROYAL ARMY MEDICAL CORPS.

Capts. to be Majs.: C. B. C. Anderson, P. E. D. Pank, and G. Moulston.

ARMY DENTAL CORPS.

Temp. Capt. W. L. Pearson, Dental Surg., Gen. List, to be Capt.

Lt. (on prob.) R. W. Mather is confirmed in his rank.

TERRITORIAL ARMY.

Capt. E. Scott to be Maj.

J. R. Wright and G. C. Vaughan to be Lts.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Army Dental Corps.—Lt. H. G. L. Fletcher, from T. A. Res. of Off. (5th Bn. Foresters), to be Lt.

ROYAL AIR FORCE.

The temp. commn. of Flying Officer S. McC. Craig (temp. Lt., Gen. List, Army Dental Surgeon) is terminated on relinquishment of his Army commission.

RESERVE OF AIR FORCE OFFICERS.

Flight Lt. W. D. Miller is transferred from Class D2 to Class D1.

INDIAN MEDICAL SERVICE.

Capt. D. R. Thomas to be Maj.

Nand Lal Sah and Bhawani Das Sindhwani to be temp. Lts.

The undermentioned retire: Maj.-Gen. A. A. Gibbs and Lt.-Cols. H. Watts and W. Lapsley.

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon Majs. R. I. Dacre, A. Young (ret.), and W. T. Briscoe.

BIRMINGHAM CHILDREN'S HOSPITAL.—The board of governors report that during the first six months of the present year the number of patients admitted was 2798, nearly 250 more than in the same period last year. The waiting-list exceeds 700, and two new wards are to be built to provide 40 more beds, together with an isolation block.

Correspondence.

"Audi alteram partem."

CANCER: VIRUS OR ENZYME?

To the Editor of THE LANCET.

SIR,—After what we have suffered at the hands of too imaginative reporters, it is refreshing to read your admirable leading article under the above title. At no time have we suggested that cancer in general is due to an enzyme. All that Dr. Murphy and I have claimed is that a certain tumour of fowls, commonly known as Rous Sarcoma No. 1, is produced by a chemical substance of enzymic nature and not by a virus in the ordinary acceptation of the word. I am a little surprised at your verdict that "the essential problem presented by the filterable tumour of the fowl is not whether the causative 'agent' is a virus or an enzyme." My memory may be playing a prank on me, but I seem to recollect that just three years ago you wrote in an article which was quoted all over the world, that the conclusions of Gye and Barnard provided "a solution of the central problem of cancer." These conclusions were based entirely on the belief that the same chicken tumour agent was a *virus*. If it is an enzyme, then the whole theory fails.

In the annual report of the British Empire Cancer Campaign, published on July 9th, I mentioned that I had once induced the Rous sarcoma by the injection of minced normal fowl pancreas, but I did not feel inclined to attach undue importance to it, as it was a solitary observation. It was only when my friend, Dr. Murphy, informed me of his more recent and more extensive experiments that I urged him to communicate them briefly to the International Conference on Cancer. When these are published in detail I think they will supply the information you desire.

The demonstration of the enzymic nature of the chicken-tumour agent, as you very well say, "would not in itself solve the problem of malignancy, but would rather present us with a phenomenon of far-reaching significance in its general biological aspects." My recent communication shows that I have realised this, and I can assure you, Sir, that although Dr. Murphy did not discuss it in his paper, he is well aware of the implications.

I am, Sir, yours faithfully,
ARCHIBALD LEITCH.

Cancer Hospital Research Institute, Fulham-road, S.W., July 30th, 1928.

"CARDIAC CLINICS."

To the Editor of THE LANCET.

SIR,—I shall be glad to be allowed space to comment on the letter from Dr. W. Robert F. Collis which appears in your last issue (p. 199).

1. I do not think that it should be said that in England we are apt to regard America as free from juvenile rheumatism. On the contrary, American reports and papers have been much studied here and, as their value deserved, widely quoted.

2. It is good to read of Dr. Collis's enthusiasm for special clinics for the study of rheumatic heart disease in children, but we are not, perhaps, as far behind in this matter here as he thinks. Glasgow was the first in the field, but there are now in the metropolitan area of London seven such centres (see *L.C.C. Gazette*, July 16th, 1928); and there are others, probably many others, in the provincial cities and big towns. In most cases such centres are attached to hospitals and are under the direction of one of the physicians on the honorary staff, but two of the seven London ones are under the care of Dr. Dobbie, of the L.C.C. Medical Service. As only 15 months have elapsed since the publication of the second report of the British Medical Association Committee on Rheumatic Heart Disease in Children, in which the establishment of such centres in connexion with hospitals was advocated, I think the respon the voluntary hospitals has been extremely good

3. I still hold that to call such centres "car clinics for children" is, in spite of the allu alliteration, the greatest possible mistake. As B.M.A. Committee considered, unless the w "rheumatism" is included in the title, attempt the prevention of rheumatic heart disease are bo to be handicapped. What the poor make of word "cardiac" I do not know, but certain it is hospital parents, although they may know that t child has rheumatism, hardly ever suspect presence of heart disease. For this reason mos the clinics have in England been called "rheuma supervisory centres." This tends, no doubt, to the clinic not only with "potential cardiacs," but with "potential rheumatics," yet, surely, the r way to study rheumatic heart disease in chil is in terms of the great systemic infection rather as a static disease of a single organ.

4. In a less important and personal matter, I leave to state that I have never held nor expre the view which Dr. Collis attributes to me, that " environmental factors at work (of which cold damp are the most important) must to some ex centre round the production of disease-infe tonsils." The phrase in brackets does not occu my paper, nor does it correspond with anythin my mind.

As this exaggerated view has been attributed me before in your correspondence columns militates against the success of much for which striving, I should like to add that to call atten to cold damp as a possible factor in the produc of juvenile rheumatism is no reason for my b credited (or debited) with the view that this is chief thing operating. I hold that there are a dozen predisposing factors, and where t "click" (as the saying is) there develops juv rheumatism. Of these factors, exposure to damp is one—sometimes absent, but often import

I am, Sir, yours faithfully,
Harley-street, W., July 28th. REGINALD MILLE

GLYCERINE IN THE TREATMENT OF SUPPURATIVE OTITIS MEDIA.

To the Editor of THE LANCET.

SIR,—When house surgeon to the Royal Un Hospital, Bath, in 1884, it was difficult to t satisfactorily cases of suppurative otitis media the dry dressings then in vogue, because the patients were unable to attend with sufficient r larity. Something therefore had to be found home use. I began with perchloride of mercur glycerine 1 in 1000. The results were astonish recent cases completely recovered in a few days, chronic cases after having resisted all other kn forms of treatment. The value attributed to glyce is its hygroscopic quality which permits it to se the innermost recesses of the suppurating sinuses the antiseptic dissolved in it. I mentioned treatment to my old friend, Prof. Rushton Par and we find him at the British Medical Associa meeting at Newcastle in 1893 advocating it routine treatment, on which reliance could be pla He tried carbolic acid in glycerine, which is equ good. Whether perchloride of mercury or carb acid be employed, the glycerine must be neat wit the addition of water. One case made a impression on me, that of an American who had a discharge from his left ear for 30 years. Th was a large perforation of the tympanic membr at the lower and posterior quadrant which comple healed and his hearing returned. Now, years a my retirement, I come across cases among acqua ances and friends where all treatment has been gi up in despair, but which recover under the glyce perchloride application.

I am, Sir, yours faithfully,
Charmouth, Dorset, July 24th. T. PAGAN LOW

POST-OPERATIVE MASSIVE COLLAPSE OF THE LUNGS.

To the Editor of THE LANCET.

SIR,—The importance of post-operative pulmonary complications is ably set out by Dr. C. R. Boland and Dr. J. E. Sheret in their paper on massive collapse of the lung, which appeared in your issue of July 21st (p. 111). The clinical description and the radiograms are admirable, but the explanation of the process is inadequate. If the massive collapse be due to plugging of bronchi why should it be more frequent after upper abdominal operations, why should it be entirely independent of the anæsthetic administered, why should it occur at all ages with equal frequency, and why should it be met with in cases where there is not the least suspicion of bronchitis or increased bronchial secretion?

That a plugged bronchus can cause collapse of the lung is well known; undoubted cases have been seen and described. When a large bronchus is plugged the onset is sudden—absolutely sudden—and the patient becomes immediately urgently ill and cyanosed. The lung slowly deflates, and the patient becomes gradually accustomed to his diminished oxygenating area and regains comfort. Later on he begins to expectorate, and slowly recovers his pulmonary function. The degree of deflation is never as great as that seen in the most severe cases of massive collapse, and the breath sounds over the lung with a plugged bronchus are absent even before deflation has begun. Bronchial breath sounds are not heard. This picture is a complete contrast to that given by massive collapse which follows injury or operation where the onset of symptoms is more gradual, dyspnœa appears within a few hours of the injury and gets worse, some slight duskiness may be detected, but cyanosis is seen only in the worse cases. Commonly both lungs are affected moderately, often one rather more than the other, usually the right base is the more deflated; but when one lung is affected the degree of deflation is considerable and may be complete. Respiration is quickened and shallow; on the affected side thoracic movement is limited, interspaces are indrawn during inspiration, and the abdomen is rigid. Breath sounds are weak at first, later become bronchial, and in complete deflation are absent except over the lung root.

Of the gunshot injuries which I saw during the late war I still possess records of 666 cases; of these a large number showed some bilateral deflation of the lungs; 30 showed massive collapse of one lung, and 12 had complete collapse of one lung. Among the post-mortem examinations were two on men who died (8 and 14 hours after being wounded) apparently of lung collapse. My note is a follows:—

> The lungs are extremely small, only filling about a quarter of the pleural sacs. They are blue and solid-looking. The lobes of the lower lobes sink in water, but the upper lobes are crepitant. There is no evidence of any bronchial obstruction; the bronchi do not contain blood or any excess of secretion.

Two of the most marked examples of complete pulmonary deflation which I have seen occurred in (1) a soldier shot through the upper part of the left shoulder—lung and pleura uninjured; (2) a girl of 18 who had a hemithyroidectomy under local anæsthesia. Neither of these cases showed cough or expectoration at any time.

The plugging of a bronchus is then an inadequate explanation of post-operative or traumatic collapse of the lungs because it fails to explain: (1) the common bilateral and occasional extensive unilateral deflation; (2) the gradual extension of deflation to the upper lobe of the affected lung; (3) the presence of bronchial breath sounds and increased vocal resonance in the affected lung.

As a result of my experience of examination of hundreds of men with thoracic wounds during the war, examinations which were clinical, X ray, and final at the time of operation, and, in a number of cases, post mortem; also of the examination of a considerable number of cases of lung complications following operation since the war, I suggest that massive collapse of the lung can only be explained adequately on the following theory.

1. That as a result of a stimulus applied to the body somewhere between the hyoid and the pubes (these are the limits within which in my personal experience injuries have been followed by massive collapse) a reflex constriction of bronchioles is set up.

2. That normally this reflex affects both lungs equally, and results in a decrease in the lung volume with raising of the diaphragm on both sides, and an increase in the negativity of intrapleural pressure. This condition was well seen and was very common in the wounded soldiers in France. In men who had small pleural effusions as the result of a thoracic wound the intrapleural pressure was more negative than normal in spite of the effusion, and the removal of even a few ounces of fluid during the first 48 hours after the injury was likely to be followed by cyanosis, dyspnœa, and marked thoracic pain.

3. In some cases the reflex affects only one lung, not necessarily on the side of the injury, and massive collapse results. It may be that normally the whole bronchial tree dilates slightly during inspiration and again during expiration. Failure to dilate during inspiration with normal dilatation during expiration would lead to pulmonary deflation, and if the abnormality were unilateral to marked collapse.

If we suppose that a reversal of this supposed normal mechanism is possible, so that a normal inspiratory dilatation is converted into an inspiratory constriction of bronchi while the expiratory mechanism remains normal, a far greater degree of deflation is possible. A reversal of the conditions following an injury—that is, a reflex constriction of the bronchi during expiration with normal dilatation during inspiration—may explain the phenomena of asthma, in which expiration is longer than inspiration, and lung overdistension is found.

There are many data in experimental physiology which confirm the presence and action of both dilator and constrictor muscles in the bronchi, and the condition of the lungs in guinea-pigs killed by anaphylactic shock strongly suggests the reflex constriction of bronchi. But the importance of lung collapse lies in (1) its comparative frequency after operations of the upper abdomen, (2) its liability to be the starting-point of pneumonia, (3) the means to be taken to prevent it, (4) treatment. For prevention I believe that combined regional and general anæsthesia should be most effectual.

For treatment in the most marked cases I believe that the best procedure is to introduce a small quantity of air into the pleura on the side of the collapse. This allows the diaphragm to move normally, restores the mediastinum to its median position, and relieves distress—I am, Sir, yours faithfully,

K. DOUGLAS WILKINSON.

Birmingham, July 25th, 1928.

To the Editor of THE LANCET.

SIR,—In THE LANCET of July 21st Dr. Boland and Dr. Sheret advise post-operative postural drainage of the bronchial tree, as a prophylactic of massive collapse, in other words, removal of the secretions when formed. May I suggest that a better method, and one more truly prophylactic, is to prevent the formation of the secretions? In a fairly long experience, extending over many hundreds of abdominal operations, I cannot recall a single instance in which any kind of lung complication occurred, in any case in which the preoperative condition of the lungs was normal and the peritoneal cavity not infected. Instead of the usual preoperative hypodermic injection of atropine gr. $\frac{1}{100}$ with morphia gr. $\frac{1}{6}$ to $\frac{1}{4}$, the patient (adult) is given, half an hour before the operation, an injection of atropine gr. $\frac{1}{50}$ without morphia. This makes the patient so dry that, when he reaches the theatre, he can scarcely smack his lips. This dried-up condition usually persists throughout the operation and for some hours afterwards. Very exceptionally, and only if the patient is secreting profusely, atropine gr. $\frac{1}{50}$ is

repeated, either at the end of the operation or after return to the ward. Nearly every case was anæsthetised with ether and was nursed, after operation, in the Fowler position.

I am, Sir, yours faithfully,

Plymouth, July 28th. C. HAMILTON WHITEFORD.

SMOOTH AND ROUGH VARIANTS OF BACTERIA.

To the Editor of THE LANCET.

SIR,—In a special article on this subject appearing in your issue of July 7th (p. 31), it is pointed out that many bacteriologists now recognise that there are wide adaptive fluctuations within the "species," or races, of many bacteria. Later on, however, the writer remarks that the observations of Todd [1] and Cowan [2] are inconsistent, by which I presume he means that both these authors cannot be right because the former found that the rough colonies of streptococci were more virulent than the smooth, whereas the latter found that, as in most other bacterial races which exhibit this phenomenon, the smooth streptococci were relatively more virulent than the rough. Since this is the second time within a week that I have seen the same criticism of Todd and Cowan's results, I thought that a note on one experience at Greenwich might be of general interest.

If S and R are used merely as convenient terms to denote colony appearance without any implication of antigenic structure, then diphtheria bacilli (*Corynebacterium diphtheriæ*) show well-marked rough and smooth varieties when grown on certain culture media. During the years 1922 to 1924 I collected over 100 strains of *C. diphtheriæ*. The chances among this series that an R or S strain would be toxigenic or not were about equal. There was no correlation whatever between the two pairs of characters, R and S, and virulence and avirulence. During 1927 and 1928 nearly 200 strains of *C. diphtheriæ* were isolated from the same school and were examined for R and S qualities and toxigenicity by my co-worker, Surgeon-Commander Parker.[3] The R strains were all avirulent, without any exception, the S strains only produced five avirulent cultures. In this series, therefore, R was always correlated with lack of virulence while S forms were almost invariably virulent to guinea-pigs. I think this evidence, in the lack of any further information, would have been considered good enough by many workers to conclude that the rough variants of *C. diphtheriæ* were always atoxic. The evidence might have led me into such a mistake, but for my past experience and the fact that Parker examined a further 50 strains of *C. diphtheriæ* collected from the environment outside the school. This last series of cultures showed no significant agreement between these characters, the R and S varieties containing both virulent and avirulent strains. These investigations show that, in as distinct a "species" of bacterium as it is practicable to define, two characters could at one time be completely correlated, while in *the same place* at another time the same characters would show no significant correlation. Similarly in one environment, correlation was complete while at *the same time* in a different environment there was no agreement between the same sets of character.

The variability of bacteria is of such fundamental importance in medicine that two further recent observations bearing on this subject are worth noting. Whittle,[4] in a recent paper, makes a praiseworthy attempt to discover a reliable method of distinguishing pneumococci from streptococci. After confessing there are certain discrepancies between his results and that of other workers in the same field, he found bile solubility to be the most reliable criterion by which to recognise a pneumococcus. But after finishing his paper he had the bad luck to find a completely bile-insoluble Type I. pneumococcus which had to be put in a footnote. By a striking coincidence in the number of the journal which contained the pre reference, Griffith[5] describes a fully virulent R va of pneumococcus, the only exception he had fou his extensive experience, to the rule that R strai pneumococci are relatively avirulent to mice compared with S. Here were two "laws" v seemed inviolate until the exceptions turned After our experiences at Greenwich it is conce if Whittle or Griffith were to repeat their work different country or in 10 to 50 years' time exception might have become the rule and the the exception! Hence there is no necessity to sider such observations as those of Todd and C to be mutually incompatible, especially as investigators only used a very small numbe strains of streptococci in their experiments.

The very fact that there are so many appa inconsistencies in bacteriological literature w indicate that incongruities are just as often du bacterial variability, as to errors or differenc technique which is the explanation some bact logists still seem to prefer. The bacteria as a g are the most plastic of living organisms, and different races fluctuate round a conventional sp type. It is one of the most important and diff tasks of modern bacteriology to define the limits, estimate the rapidity, of these adaptive fluctua and to try to discover the environmental sti which produce them. Griffith's work, just referre is a brilliantly original attempt to do this in the of pneumococcal types, whether his results are confirmed or not. We cannot be reminded frequently that the "species concept" applie bacteria is far less definite than when applied t sexual metazoa. As long ago as 1912 Minchin [6] uncertain if "species," in the strict biological mea occurred among the bacteria at all. Although I w not go as far as that, yet these doubts of an emi worker in pure biology are a salutary subject fo worker in applied medical biology to ponder ov

I am, Sir, yours faithfully,

SHELDON F. DUDLE

Royal Naval College, Greenwich, July 26th, 1928.

CANCER AND DIET.

To the Editor of THE LANCET.

SIR,—On p. 192 of your last issue a speaker at recent Cancer Conference is reported as saying "a campaign had been going on amongst the me profession that certain forms of food produced ca An eminent surgeon was even devoting his lif persuading the public that cancer was due to ea meat." As chairman of the Food Committee of New Health Society and therefore closely conne with its dietetic propaganda, may I state that no s absurd statement has ever been issued by the Soc or by its president. The ultimate damage that accrue from long continued malnutrition and o results of a faulty diet may, in the opinion of som us, help to explain the cancer problem. This theory that the public, at any rate, will be advised to ponder and act upon.

I am, Sir, yours faithfully,

S. HENNING BELFRAG

New Health Society, London, July 31st, 1928.

THE MEDICAL DIRECTORY.

To the Editor of THE LANCET.

SIR,—The annual circular has been posted to e member of the medical profession. If the form not been received, a duplicate will be sent on requ We shall be grateful for the return of the forms an early post.—We are, Sir, yours faithfully,

J. AND A. CHURCHILL

40, Gloucester-place, Portman-square, W. 1, July 26th, 1928.

[1] Todd, E. W.: Brit. Jour. Exper. Path., 1928, ix., 1.
[2] Cowan, M. L.: Ibid., 1927, viii., 6.
[3] Parker, H. B.: Ibid. (in the press).
[4] Whittle, C. M.: Jour. of Hyg., 1928, xxvii., 200.
[5] Griffith, F.: Ibid., 1928, xxvii., 114.
[6] Minchin, E. A.: An Introduction to the Study of Protozoa, London, 1912, p. 141.

Obituary.

R ARTHUR CHANCE, F.R.C.S. & P. IREL., HON. F.R.C.S. EDIN.,

AST PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND.

E regret to announce the death of Sir Arthur nce, which occurred at his residence, Merrion- are, Dublin, on July 26th, after a long illness, the age of 69 years. He had been for many s one of the most prominent members of the ession in Ireland and his death will be regretted a large circle of patients and friends.

orn in 1859, son of Albert Chance, of Dublin, received his education in Dublin and ob- ed diplomas from the two Royal Colleges in 8), and at once devoted himself to surgery.

SIR ARTHUR CHANCE.
Photo by Lafayette.

Whilst a very young man he was appointed surgeon to Jervis-street Hospital, and a few years later moved to the Mater Misericordiæ Hospital, with which he remained connected for the rest of his life. He took an active part in the work of the Council of the Royal College of Surgeons, of which College he was elected President in 1903. For many years past he has represented that body on the General Medical Council last year was nominated as its representative the Medical Registration Council of the Irish e State, a post which, however, he had speedily resign on account of ill-health. From 1917 to 0 he was Inspector of Military Surgical Hospitals Ireland, with the rank of colonel in the Army lical Service. He filled a term as President of Royal Academy of Medicine in Ireland, and was geon to more than one Viceroy of Ireland, so that n in 1905 he received the honour of knighthood distinction had been anticipated for him by all knew him. There were few public professional vities in Ireland in which he did not take an ve share. Specially interested in education, he e very useful service to the General Medical ncil, while he was determinedly opposed to any nge in the system of medical registration after establishment of the Irish Free State.

hance was a man of great versatility and quick- s of intellect, who would have been successful in profession he might have chosen to adopt. His dent leadership and shrewd judgment will long be sed, and he will be remembered as having played important part in Irish affairs at a time of special iculty.

Ie married, first, Martha, daughter of Daniel ney of Belfast, and secondly, Eileen, daughter of liam Murphy, of Dartry, who survives him with t sons and five daughters. Three of his sons are nbers of the medical profession, one, Mr. Arthur nce, being surgeon to Dr. Steevens' Hospital, blin.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—Diplomas of L.R.C.P. and M.R.C.S. have been conferred upon 167 candidates (136 men and 31 women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and have complied with the by-laws of the Colleges. The following are the names and medical schools of the successful candidates :—

G. Allen, Birmingham and London ; J. M. Anderson, Durham and Charing Cross ; W. R. Ashby, Cambridge and St. Bart.'s ; Julia C. H. Avery, St. Mary's ; Gertrude C. Banks, Royal Free ; S. Behrman, St. Bart.'s ; W. A. G. Bell, Cambridge and St. Thomas's ; A. Bennett, St. Bart.'s ; Mary Berkeley, Royal Free ; T. H. Berrill, Bristol ; S. P. Bhatia, Bombay and St. Thomas's ; C. H. Birt, Birmingham ; F. A. Blackwood, St. Thomas's ; Kathleen L. Bland and J. R. Bond, Univ. College ; V. G. Morgaonkar, Bombay and London ; N. J. Boulton and R. V. Bradlaw, Guy's ; J. V. Broad, Cambridge and St. George's ; Nellie Brown, Westminster ; E. C. B. Butler, London ; Beatrice A. Butterworth, Royal Free ; E. N. Callum, London ; Catherine F. Cameron, Cambridge and Royal Free ; L. A. Canaan, Yale and London ; Mavis H. D. Carr, Cambridge and Royal Free ; T. H. Carr and B. R. Caygill, Leeds ; Muriel G. E. Clark, Charing Cross ; W. A. Clements, Sheffield ; Nellie Clifton, Royal Free ; Lilian M. C. Clopet, Cardiff ; Dorothy M. Conyers, Royal Free ; T. M. Corcoran, Univ. College ; O. J. C. Cotton, Cambridge and St. Thomas's ; E. Courtin, St. Thomas's ; J. H. Crawford, Cambridge and St. Mary's ; A. T. Croucher, St. Mary's ; A. M. Cunningham, Cambridge and Univ. College ; D. W. Currie, Leeds ; T. Dagger, Liverpool ; A. Danin, Guy's ; H. W. Daukes, St. Thomas's ; W. P. M. Davidson, St. Bart.'s ; E. L. F. De Mel, Ceylon ; W. F. de Villiers, Cape and London ; P. Dickman, Cape and Charing Cross ; C. J. V. Dobbin, Guy's ; G. H. Dobney, Middlesex ; J. F. Duesbury, Birmingham ; J. W. Ellis, Guy's ; R. C. S. Evans, Cardiff ; A. C. Fisher and Cecilia F. Fox, Bristol ; P. H. Fox Cambridge and St. Bart.'s ; E. Fulford, Guy's ; G. H. Garfield, Cardiff ; R. J. S. Garrow, St. Thomas's and Leeds ; F. W. Gilbert, Guy's ; Agnes G. Gillespie, Liverpool ; Y. Gimpelson, Royal Free and St. Mary's ; L. Godlove, Leeds ; S. Goldman and J. P. Gubbins, London ; J. C. Heather, Guy's ; Kathleen M. Henderson, Laurel K. Heny, Helen M. Herbert, and Alice D. M. Hodge, Royal Free ; F. E. G. Hopkins, Cambridge and Guy's ; D. R. House, Bristol ; I. M. Hughes, Manchester ; E. A. Hunter, London ; M. Jafar, Punjab ; M. K. Jilani, Lahore and Liverpool ; A. W. Johns, London ; S. Kaul, Punjab and St. Bart.'s ; G. H. Kennett, Sydney ; B. Kettle, St. Bart.'s ; G. G. King, Madras and St. Mary's ; M. L. Kreitmayer, St. Bart.'s ; Nellie I. Lanckenau, Royal Free and Univ. Coll. ; Kenneth E. Lane, Guy's ; T. C. Larkworthy, Cambridge and St. George's ; E. G. Laurence, St. Bart.'s ; R. R. Leaning, St. Mary's ; J. C. Leigh, Leeds ; G. Leighton, Birmingham ; G. E. Lewis, Cambridge and London ; I. B. Limbery, St. Thomas's ; Kathleen M. MacLaren, Westminster ; G. C. C. MacVicker, Cambridge and St. Bart.'s ; M. J. Malley, St. Bart.'s ; F. B. Mallinson, St. George's ; H. M. Mikhail, Univ. College ; Hermia M. Mills, Royal Free ; L. Milner, S. Africa and Guy's ; W. E. S. Moreton, Charing Cross ; R. H. Morley, Leeds ; I. Morris, Univ. College ; L. H. Morris, Cambridge and London ; O. N. Morris, King's College ; J. E. Morton, Guy's ; Millicent Moseley, Birmingham ; J. H. Moynihan, Charing Cross ; Bhavani Natarajan, Bombay ; L. A. Newton, St. Bart.'s ; H. G. Nimbalker, Bombay and Middlesex ; G. P. Nixon, St. Bart.'s ; G. W. Oliphant, Guy's ; E. G. M. Palser, Univ. College ; A. W. Patton, St. Bart.'s ; Margaret E. Peaker, King's College ; M. G. Pearson, Oxford and Westminster ; A. L. P. Peeney, Manchester ; R. L. P. Peregrine, Oxford and Guy's ; F. Phillips, Adelaide and London ; J. A. Pocock, Cambridge and Univ. College ; H. G. Pritchard, Oxford and Charing Cross ; N. L. Probert, Cardiff and Middlesex ; A. Rabinowitz, Berlin and Middlesex ; R. H. Raine, Durham ; R. J. H. Raines, Leeds ; E. A. P. S. Rawlings, Charing Cross ; R. G. E. Richmond, St. Thomas's ; D. T. Robinson, Manchester ; J. B. Robinson and W. P. Roe, Guy's ; M. V. Samuel, Adelaide and London ; Eluned Saunders, Cardiff and Westminster ; Christine F. T. Saville, Univ. College ; E. H. Sears, Guy's ; H. M. Sein, Calcutta and Guy's ; H. Selby-Brown, Guy's ; H. T. Simmons, Manchester ; W. H. Simonds, Cambridge and St. Thomas's ; D. Sivasubrahmaniam, Madras and London ; Constance B. Smith, King's College ; Edith J. L. Smith, Royal Free ; Elizabeth S. Smith, Birmingham ; E. H. Spickett, St. Bart.'s and Cardiff ; T. T. Stamm, Guy's ; D. M. Stern, Cambridge and London ; R. Ström-Olsen, Cardiff ; A. B. Sullivan, Sydney and London ; A. B. Taylor, Birmingham ; J. G. Thwaites, St. Thomas's ; B. Timothy, Madras and London ; W. E. Tucker, Cambridge and St. George's ; G. N. Unnithan, Madras and Univ. College ; B. T. Utley, St. George's ; L. E. Vine, Bristol ; F. H. Ward, Cambridge and St. Bart.'s ; D. K. Weston, Guy's ; D. B. J. Wijeyesekera, Ceylon and King's College ; P. Wiles, Middlesex ; Gladys E. Wilkinson, Manchester ; G. G. Willcox, Cambridge and St. Thomas's ; Enid M. Williams, Cardiff ; L. D. Williams, Cardiff and Guy's ; W. A. Wilson, Univ. College ; E. W. Winch, Cambridge and St. George's ; H. S. H. Wood, Middlesex ; J. L. M. Wood, Sheffield ; Elsie E. Wright, Royal Free and St. Mary's ; T. C. Yip, St. Bart.'s ; and H. D. R. Zscherpel, Madras and St. Bart.'s.

The undermentioned diplomas were conferred (jointly with the Royal College of Surgeons) upon the following candidates :—

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.

C. H. Ackroyd, C. H. Bamford, W. J. Chapman, A. L. El Kirdani, Charlotte E. Fisher, B. B. Ghosh, J. B. Hamilton, R. J. Harley-Mason, D. R. Jadeja, D. Katz, G. L. Khirwadkar, D. G. Kotibhaskar, F. J. Lavery, H. H. Mahmood, T. M. O'Neill, F. W. G. Smith, A. F. Stewart, J. M. Thomson, A. Walbank, and J. Wood.

DIPLOMA IN PUBLIC HEALTH.

D. R. Bernhardt, R. A. D. J. Bernhardt, H. P. Bilimoria, H. St. C. Colston, A. C. Counsell, G. I. Davies, C. H. Dhala, M. Farid, F. Harris, G. H. Hayes, Margaret Holdsworth, D. R. Jandial, Iris A. Jenkin-Lloyd, Eva M. Malmberg, S. N. Michaels, Josefine W. Nagel, M. A. Nicholson, F. W. Oldershaw, D. B. Parakh, Jessie L. Robb, Mary Schofield, Beatrice M. Smithies, Josephine I. Terry, D. L. Tucker, and G. R. Waller.

Diplomas in Laryngology and Otology and in Psychological Medicine have been conferred upon candidates whose names appeared in our issue of July 21st (p. 153).

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—At an ordinary meeting of the College held on July 26th, with Sir John Rose Bradford, the President, in the chair, the following were elected members :—

Charles N. Armstrong, Ramananda Bandyopadhyay, Philip Bayer, John L. Edwards, Frank R. Fletcher, Robert D. Gillespie, Frank Goldby, Hamilton Hartridge, Thomas R. Hill, Horace Joules, Charles E. Kellett, Robert M. B. Mackenna, Patrick H. O'Donovan, Ian H. K. Stevens, and Arthur S. Wesson.

Licences to practise medicine were conferred on 167 candidates whose names appear above.

Mr. Arthur Sturgess Hollins, M.B. Camb., M.R.C.P., of King's College Hospital, was awarded the Murchison Memorial Scholarship.

The following officers of the College, members of committees, and examiners were elected for the ensuing year :—

Censors.—Lord Dawson of Penn, Dr. J. S. Collier, Dr. A. P. Beddard, and Dr. R. A. Young.
Treasurer.—Dr. S. P. Phillips.
Registrar.—Dr. Raymond Crawfurd.
Harveian Librarian.—Dr. Arnold Chaplin.
Assistant Registrar.—Dr. R. O. Moon.
Library Committee.—Dr. F. Parkes Weber, Dr. H. C. Cameron, Dr. H. R. Spencer, and Dr. C. J. Singer.
Curators of the Museum.—Dr. J. M. Bruce, Dr. C. E. Lakin, Dr. William Hunter, and Dr. J. H. Thursfield.
Finance Committee.—Dr. H. Morley Fletcher, Sir John Broadbent, and Dr. J. H. Thursfield.
Examiners.—Chemistry : Mr. H. W. Cremer and Mr. W. H. Hurtley. Physics : Mr. J. H. Brinkworth and Mr. D. Orson Wood. Practical Pharmacy : Dr. W. J. Adie, Dr. Hugh Gainsborough, Dr. Newman Neild, Dr. V. J. Woolley, and Dr. Orlando Inchley. Physiology : Dr. B. J. Collingwood and Dr. Swale Vincent. Anatomy : Dr. G. Elliot Smith. Pathology : Sir Frederick Andrewes and Dr. Charles Bolton. Medical Anatomy and Principles and Practice of Medicine : Sir Percival Hartley, Dr. A. G. Phear, Dr. Herbert French, Dr. A. E. Russell, Dr. Cecil Wall, Dr. J. A. Nixon, Dr. Frederick Langmead, Dr. C. E. Lakin, Dr. D. H. de Souza, and Dr. F. M. R. Walshe. Midwifery and Diseases Peculiar to Women : Dr. Cuthbert Lockyer, Dr. Eardley Holland, Dr. Malcolm Donaldson, F.R.C.S., Dr. William Gilliatt, and Dr. Stanley Dodd. Public Health : Part I., Dr. J. H. Ryffel ; Part II., Dr. Charles Porter. Tropical Medicine : Dr. J. C. G. Ledingham and Dr. H. H. Scott. Ophthalmic Medicine and Surgery : Dr. Grainger Stewart. Psychological Medicine : Part I., Dr. Edward Mapother ; Part II., Dr. J. Porter Phillips and Dr. Bernard Hart. Laryngology and Otology : Dr. D. R. Paterson.

Sir Humphry Rolleston was re-elected as representative on the Executive Committee of the Imperial Cancer Research Fund.

Sir Wilmot Herringham was appointed to deliver the Harveian Oration, and Dr. J. A. Arkwright, F.R.S., the Bradshaw Lecture in 1929. The following further appointments were announced : Dr. G. F. Still as Fitzpatrick Lecturer for 1929 ; Dr. R. A. Young as Lumleian Lecturer for 1929 ; Dr. E. B. Verney as Goulstonian Lecturer for 1929 ; Dr. F. M. R. Walshe as Oliver-Sharpey Lecturer for 1929 ; The Rt. Hon. H. A. L. Fisher as Lloyd Roberts Lecturer for 1929 ; and Sir Charles Martin as Croonian Lecturer for 1930.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates for the Triple Qualification have been approved and have been admitted as Licentiates :—

FINAL EXAMINATION.

Betty C. Hamilton, E. A. Downes, John Campbell, D. A. Herd, A. J. A. Gray, Oscher Stern, J. L. Dudgeon, C. V. Salisbury, S. K. Pillai, M. J. S. Pillai, A. M. D'Cotta, Maud Heaton, H. S. Lawrence, A. F. B. Mackay, A. El Sayed El Khishin, A. B. Mendis, Robert Rajaretnam Tamber, N. S. Fraser, C. L. X. S. Muttukumaru, I. M. Chi[illegible] A. M. Fraser, David Bendel, Barney Schulman, F. [illegible] Stewart, Harry Lazarus, H. M. C. de Silva, B. S. [illegible] E. H. B. Gooch, W. D. Alvis, Aaron Jacor[illegible] R. A. F. M. Saunders, A. J. F. Almeida, F. A. Silv[illegible] J. S. Goonting.

The following have satisfied the examiners in the [illegible] mentioned subjects :—

Medicine.—J. T. F. Pearse, J. H. Brush, D. N. Chi[illegible] H. A. Mohamed, Gerald Kahn, Hope Lazarus, [illegible] Abeyaraine, Chrysostom Joseph, Leslie Myers, A. [illegible] Attia, S. S. Nagi, and Hyam Saacs.
Surgery.—J. R. Martin, J. T. F. Pearse, Hanna Bar[illegible] J. H. Brush, C. H. Wilkie, C. Joseph, Leslie Craig, Ok[illegible] Ajibade, A. L. Malik-Mansour, A. K. M. Attia, [illegible] Craig, and Kandiah Kanagasabapathy.
Midwifery and Gynæcology.—J. R. Martin, F. R. [illegible] Kennedy, Hanna Barsoum, B. A. D. Robert, M. A. Moh[illegible] John Elliott, W. P. B. Winston, Leslie Craig, T. R. Ja[illegible] Leslie Myers, S. W. Cruickshank, D. S. McMillan, Do[illegible] Brink, and Hyams Saacs.
Medical Jurisprudence and Public Health.—M. C. S[illegible] W. O. Molander, F. R. B. H. Kennedy, W. P. Ker[illegible] G. G. Brown, H. G. Somerville, Margaret Leslie, [illegible] McConnell, Amin Madwar, Dorothy Williams, R. L. [illegible] L. C. Leslie, Harry Michaelson, Agnes F. Millar, [illegible] Amour, J. E. Morrison, J. W. Gregory, and W. V. And[illegible]

UNIVERSITY OF EDINBURGH.—At a gradu[illegible] ceremonial on July 18th the following degrees [illegible] conferred :—

M.D.

†Harry Bedingfield, ‡J. C. R. Buchanan, J. J. B. Edi[illegible] F. W. Gavin, ‡C. G. Gooding, James Gray, ‡Muri[illegible] Henderson, ‡J. C. Hodgson, J. C. Macgown, J. [illegible] M'Latchie, ‡G. W. Milroy, *J. W. T. Patterson, N. H. S[illegible] and A. J. Wilson.

* Awarded gold medal for thesis.
† Highly commended for thesis.
‡ Commended for thesis.

M.B., CH.B.

K. A. Abayomi, J. A. Adams, W. A. D. Adamson, Ian [illegible] S. W. H. Askari, E. L. Bartleman, D. F. Baxter, [illegible] Benson, K. S. P. Blatchley, §G. I. H. Braine, Dorothy [illegible] Brander, Jane P. H. G. Brown, J. S. Brown, §John E[illegible] §A. M. Calder, §J. C. Clark, C. W. Clarke, J. L. C[illegible] J. D. Crerar, J. J. Cruickshank, F. H. A. L. Davi[illegible] William Davidson, D. B. Davies, R. H. Dawson, [illegible] Dewar, J. R. Dogra, C. R. E. Downing, I. D. Ea[illegible] J. C. Edwardes-Jones, E. L. Farquharson, D. I. C. Finla[illegible] J. A. C. Fleming, §T. M. Galloway, E. G. Gibbs, Margar[illegible] Gillan, T. W. Gillespie, T. H. Gillison, E. M. Gilroy, [illegible] ander Gordon, A. A. Gordon, Arthur Greenberg, [illegible] Hanan, K. N. A. Herdman, L. R. Hetherington, §I. G[illegible] Hill, Alice E. Hodge, R. M. Honey, J. L. M. Jef[illegible] A. J. Jones, H. M. King, D. F. Laing, C. R. D. L[illegible] A. J. M'Cutcheon, W. A. M'Dowall, J. H. M'Elney, [illegible] MacGregor, F. C. M. M'Ilwrick, P. D. M'Kenna, I[illegible] Mackenzie, J. A. M'Lauchlan, A. D. Macleod, J. [illegible] M'Queen, Malcolm Macvicar, G. H. Marshall, Ber[illegible] Matheson, J. A. Melanson, William Miller, T. A. H. M[illegible] C. P. M. Neethling, R. F. Ogilvie, A. R. Oliver, [illegible] Paterson, J. B. Patrick, L. B. Patrick, D. P. Pick, [illegible] Platt, D. B. Purves, Balwant Ram, E. B. Rayner, [illegible] Redhead, A. D. Reid, G. J. Roberts, Donald Rober[illegible] J. D. Robertson, C. A. Rogan, P. K. Shand, William S[illegible] A. F. S. Silver, Alexander Simpson, John Sinclair, [illegible] Smith, John Stevenson, R. T. Thin, R. S. Thom[illegible] §I. M. Tod, §Ta-Ming Tso, A. J. Vakil, R. H. Vartan, [illegible] M. Walker, S. L. Ward, M. H. Watthews, J. S. Wet[illegible] A. H. Weston, and J. S. Westwater.

§ Passed with honours.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.

G. W. Gale.

DIPLOMA IN RADIOLOGY.

G. G. Allan, A. J. W. Allen, R. S. MacHardy, W. J. Mc[illegible] and F. G. Stephens.

The Cameron Prize in Practical Therapeutics has [illegible] awarded to Dr. Constantine Levaditi, Professor of M[illegible] biology in the Pasteur Institute, Paris, in recognitio[illegible] the importance of his recent contributions on the therap[illegible] action of bismuth.

Medals, prizes, and scholarships were conferred [illegible] follows :—Thesis Gold Medal : J. W. T. Patte[illegible] Ettles Scholarship and Leslie Gold Medal : I. G. W. [illegible] Gunning Victoria Jubilee Prize in Pathology : J. D[illegible] Gray. Milner Fothergill Medal in Therapeutics : J[illegible] M'Crie. Allan Fellowship in Clinical Medicine and Cli[illegible] Surgery : I. G. W. Hill. Freeland Barbour Fellows[illegible] A. B. Walker. M'Cosh Graduates and Medical Bursa[illegible] A. S. Johnstone. Mouat Scholarship in the Practic[illegible] Physic : T. M'L. Galloway. Buchanan Scholarshi[illegible] Midwifery and Gynæcology : T. N. MacGregor. Ja[illegible] Scott Scholarship in Midwifery : Vera M. Walker. Be[illegible] Prize in Anatomy and Surgery : I. M. Tod. Conan D[illegible] Prize : R. M'K. Honey. Annandale Gold Medal in Cli[illegible] Surgery : Ian Aird. Murdoch Brown Silver Meda[illegible] Clinical Medicine : Charles W. Clarke. Royal Vict[illegible] Hospital Tuberculosis Trust Gold Medal : J. B. Pat[illegible] Scottish Association for Medical Education of Wo[illegible] Prize and Dorothy Gilfillan Memorial Prize : Vera [illegible] Walker. Wightman Prize in Clinical Medicine : A. F[illegible] Clarkson and A. S. Paterson (equal). Pattison Priz[illegible] Clinical Surgery : I. G. W. Hill. Sir Robert Jones [illegible]

n Orthopædic Surgery: Esmé M. Gilroy. Wellcome Medals and Prizes in the History of Medicine: Gold Medal, V. A. Bain; Silver Medal, J. A. P. Cameron. Cunningham Memorial Medal and Prize in Anatomy: T. H. Brown. Whiteside Bruce Bursary: J. A. Baty.

CIETY OF APOTHECARIES OF LONDON.—At t examinations the following candidates passed in the cts indicated:—

gery.—K. E. Clarke, Charing Cross Hosp.; K. G. Milad, t. Mary's Hosp.; and H. Tenenbaum, Nancy and London Iosp.

licine.—M. K. Bryce, London Hosp.; J. P. Collinson, heffield and London Hosp.; N. Das, London Hosp.; V. B. Hallums, St. Mary's Hosp.; A. H. Hennessey, delaide and London Hosp.; E. P. Johnson, Manchester; . A. Lipkin, Liverpool; and H. S. Marks, Guy's Hosp.

ensic Medicine.—T. A. Barnabas, Bristol; P. C. Basu, alcutta; H. C. Clifford-Smith, Charing Cross Hosp.; . P. Collinson, Sheffield and London Hosp.; H. H. Jackson, anchester and Charing Cross Hosp.; E. P. Johnson, anchester; A. A. Leibovitch, Kharkoff and London Iosp.; T. A. P. Proctor, Birmingham; and H. Tenenbaum, ancy and London Hosp.

lwifery.—T. A. Barnabas, Bristol; P. C. Basu, Calcutta; . S. B. Bray, Cambridge and St. Bart.'s Hosp.; A. R. D'Abreu, Leeds; H. W. E. Dickey, Manchester; N. H. Kettlewell, Middlesex Hosp. and Bristol; and S. M. Rahman, alcutta and Middlesex Hosp.

Diploma of the Society was granted to the following lates, entitling them to practise medicine, surgery, and fery: P. C. Basu, M. K. Bryce, H. E. Clarke, W. B. ns, and H. S. Marks.

IVERSITY OF BELFAST.—Dr. A. M. Drennan een appointed to the chair of pathology in the Uni- y. A graduate of Edinburgh, Prof. Drennan, at t occupies the chair of clinical pathology in the rsity of Otago, New Zealand.

URSE OF INSTRUCTION FOR D.P.H.—A three ns' course of lectures and demonstrations on clinical ce and in hospital administration will be given at North-Eastern Hospital, St. Ann's-road, Tottenham, on, N., by Dr. F. H. Thomson, the medical superin- nt, on Mondays and Wednesdays, at 4.45 P.M., and ate Saturdays at 11 A.M., beginning on Oct. 1st. er information may be had from the clerk to the politan Asylums Board, Victoria Embankment, E.C. 4.

E LATE MR. CHARLES CURD.—The death occurred ly 28th of Mr. Charles Curd in his seventy-third year. tive of Bath, he received his medical education at ng Cross Hospital, qualified as L.S.A. in 1878 and .S. in 1879, and held a house appointment at the al. After practice at Amersham and Liskeard he ed to Bath, where he was for many years closely fied with the work of the Royal United Hospital, chairman of the Board of Management in 1925 and a e at the time of his death. During the war he rendered ent service at the Bath War Hospital. A prominent ason, he devoted much of his time to local affairs, or some time represented Lansdown Ward on the of Guardians.

IMAL DISEASES RESEARCH ASSOCIATION.—A on of £10,000 has been given anonymously to this ation, whose headquarters are at Aberdeen, in order engthen and increase the research staff.

CRETARYSHIP OF ST. THOMAS'S HOSPITAL.—A tation on behalf of the governors and medical staff Thomas's Hospital, London, has been made to Mr. Roberts, C.B.E., who is now retiring from the position retary and receiver, which he has held for the last ars. Mr. Roberts's successor will be Lieut.-Colonel B. Irwin, D.S.O., who has been assistant secretary 1922.

E LATE DR. G. O. MCKANE.—Dr. George nt McKane, who died at Cleethorpes on July 26th eighty-first year, had spent nearly half a century in al practice. He gained the Scottish triple qualifica- n 1875, and retired only three or four years ago. The years of his active life were lived at Waltham, near by, where he carried on a large country practice. s also medical officer of health to the Grimsby Rural t Council, and poor-law medical officer and public ator to the fourth district of the Grimsby Union. n of strong and cheerful personality he had great s of sympathy, and enjoyed the confidence of his ts to a remarkable degree. Dr. McKane was a native xham, and before studying medicine qualified as a st. He was for many years in practice at Byers , Co. Durham, and Leeds. His two sons are members medical profession.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Bills Advanced.

IN the House of Lords on Friday, July 27th, the Reorganisation of Offices (Scotland) Bill was read the third time. In the House of Commons the Food and Drugs (Adulteration) Bill was read the third time.

HOUSE OF COMMONS.

WEDNESDAY, JULY 25TH.

Ex-Service Man and Sleepy Sickness.

Sir HENRY COWAN asked the Secretary of State for War whether his attention has been called to the case of Alfred Lines (whose blue medical sheet was endorsed Fit for service in any part of the world), who joined the Middlesex Regiment on June 4th, 1926, served with the Shanghai defence force in China until afflicted with sleepy sickness, returned to England and was discharged from Netley Hospital as physically unfit for any form of military service on Nov. 11th, 1927, with a sum of £1, and who, after waiting for his official discharge papers, received a communication from Chelsea Hospital, dated Dec. 5th, 1927, stating that he was not entitled to any discharge pension and offering him a gratuity of £6 only, less deduction of any advances that had been made to him; and whether, having regard to the fact that his panel doctor had certified that Lines would never be able to work again and that the symptoms of the disease which necessitated his discharge from the Army first appeared during his military service with the Shanghai defence force, he would consider granting this man some compensation more adequate than the amount of 7*s.* 9*d.* actually paid him as the balance of the gratuity of £6.—Mr. DUFF COOPER (Financial Secretary to the War Office) replied: This case has been carefully reviewed at the War Office, and the Army medical authorities are satisfied that the disability was not caused by military service. In the circumstances, Mr. Lines has no claim to compensation, and the small gratuity awarded is the appropriate grant in his case.

Replying to further questions in regard to Mr. Lines's case, Mr. Duff Cooper said the War Office could not allow the principle to be established that anybody who happened to fall ill while on military service should by that fact alone be entitled to some compensation. There was no evidence to show that this man's illness was in any way connected with his being sent abroad. It was not an illness to which soldiers were subject through their being sent abroad.

Health of the Merchant Service.

Dr. VERNON DAVIES asked the President of the Board of Trade if he would consider the advisability of coöperating with the Minister of Health to issue an annual report on the health of the merchant service, bearing in mind that the seaman's mortality from disease exceeded the average by 48·8 per cent., and his mortality from violence by 4·30 per cent.—Mr. HERBERT G. WILLIAMS (Parliamentary Secretary to the Board of Trade) replied: My right hon. friend will consult the Minister of Health with regard to the suggested preparation of an annual report on the health of the merchant service, and I will let my hon. friend know the result in due course.

Tuberculosis Mortality-rate.

Sir ROBERT THOMAS asked the Minister of Health whether he was aware that there had been since 1910 little reduction in the tuberculosis mortality-rate for males between the ages of 15 and 25, while for females between these ages the rate had increased; and what measures he proposed to take to improve the position.—Sir KINGSLEY WOOD replied: The answer to the first part of the question is in the affirmative, but the rate for both males and females between these ages appears at the present time to be decreasing. The discrepancy between the rate of decrease in the mortality from tuberculosis in the general population and that in the groups referred by the hon. Member has been under consideration in my department, but my right hon. friend is advised that its causes are obscure. Investigation is proceeding, and the tuberculosis officers of local authorities will be asked to give special attention to the question.

THURSDAY, JULY 26TH.

Treatment of Casual Paupers.

Mr. SHEPHERD asked the Minister of Health whether, in view of the number of unemployed men and women now tramping the roads in search of employment, he proposed to revise the regulations concerning their treatment, with special regard to food, sleeping, medical inspection, searching, task work, detention, washing, and method of obtaining

admission.—Mr. CHAMBERLAIN replied: No, Sir. I am not aware of any reason for the revision of the regulations in force, which do, as the hon. Member is aware, make special provision for casuals genuinely in search of employment. I think it is important that there should be general and complete compliance with the regulations, and I am giving my officers further special instructions to impress upon guardians and their staffs the necessity of securing this full compliance in cases in which there is any default.

Shortage of Water in Derbyshire.

Mr. DUNCAN asked the Minister of Health whether he was aware of complaints of the short supply of water for domestic purposes in the parish of South Normanton, in the Blackwell rural district council area, Derbyshire; whether this shortage covered a period of years; whether complaints had previously been made to the Ministry of Health; whether the local authorities had laid any proposals before the Ministry for approval, and whether there was any delay occasioned in his department in this matter; and whether he was prepared to take immediate action with a view to terminating the present shortage and providing the area with a full supply sufficient for the general health and domestic needs of the inhabitants.—Mr. CHAMBERLAIN replied: The answers to the first four parts of the question are in the affirmative, and to the sixth part in the negative. In reply to the fifth part, an outline of a joint scheme was submitted to me in April, 1927, and provisionally approved in January last, but in the meantime further difficulties have arisen in connexion with the risk of subsidence. In reply to the seventh part of the question, I have directed one of my inspectors to make a local investigation with a view to expediting temporary relief, and I am hoping to receive from the local authorities concerned definite proposals for a permanent scheme on satisfactory lines.

New Cancer Hospital in Manchester.

Sir THOMAS WATTS asked the Minister of Health if his attention had been called to the proposed establishment of a cancer hospital in Palatine-road, Withington, a residential district of Manchester; and, having regard to the depreciation in the value of property in the district which would result, would he set up an inquiry into the matter.—Mr. CHAMBERLAIN replied: The answer to the first question is in the negative. If, as I assume, the reference is to the establishment of a voluntary hospital, I am not aware that it is open to me to take any action.

Traffic Noises in Urban Streets.

Sir ROBERT THOMAS asked the Home Secretary whether he was aware that there is a growing volume of public protest against the noise of urban streets; that it was endangering the lives of sick people and undermining the fitness even of those in normal health; that it interfered with education and lowered the efficiency of business; that experts estimated that 60 per cent. of the noise was preventable; and that it would continue to increase unless action was taken; and whether he would, in conjunction with the Ministers of Health and Transport, make an effort to deal with these conditions.—Sir W. JOYNSON-HICKS replied: I am aware that there is much complaint, and I think with good ground. I have done all in my power to see that the nuisance is abated, so far as this is possible, by police action under existing powers, and I will certainly consult with my right hon. friends as to whether anything further can be done.

Sir R. THOMAS: Is the right hon. gentleman aware that a high medical authority at a meeting of the British Medical Association last week estimated that the loss in efficiency to the nation owing to these noises amounted to no less a sum than £1,000,000 a week?

Sir W. JOYNSON-HICKS: Yes, I have noticed that.

Lieut.-Commander KENWORTHY: Will the right hon. gentleman consult with the Prime Minister about this in view of the probability that the present laws are insufficient to deal with the growing noises?

Mr. LANSBURY: Will the right hon. gentleman communicate with the London County Council and ask them to keep the tramway tracks in order and thus prevent the most infernal noises?

Sir W. JOYNSON-HICKS: I will communicate with the Minister of Transport whose duty it would be, I think, to communicate with the London County Council.

Captain CROOKSHANK: Will the right hon. gentleman look into the practice which obtains in the United States of zoning certain areas where certain noises are prohibited?

Sir R. THOMAS said that this was a fearfully important question, and he thought that the House ought to get from the Home Secretary something more than they had had. The right hon. gentleman had said that he would consult with his Ministerial colleagues. Could he do so and report to the House before the end of the session?

Sir W. JOYNSON-HICKS said that he would take the opportunity of discussing the matter with his colleagues, but whether it would be possible to answer a definite q before the end of the session he could not say.

Conjunctivitis in the Artificial Silk Industry.

Mr. KELLY asked the Home Secretary whether had been received from his inspectors about the i in injuries suffered by men and women engaged artificial silk industry.—Sir WILLIAM JOYNSON replied: I have received reports by the inspectors I am glad to state show that, except in one works there has been a large increase in the number of employed, the number of cases of conjunctivitis has, recent months, been decreasing. As the hon. M knows, this industry is receiving the closest attentic from the staff generally and from the medical insp and much has been, and is being, done to impro conditions.

Early Treatment of Mental Disease.

Dr. VERNON DAVIES asked the Minister of Healt was aware that the only hope of reducing the incid insanity and improving the recovery-rate was by the law so as to allow and encourage the early and treatment of persons mentally ill; and if he would, early date, give this matter his serious considerati take the necessary action.—Mr. CHAMBERLAIN repl should be sorry to think that the *only* hope of reduc incidence of insanity and improving the recovery-r in the measures which my hon. friend suggests. fully realise the great importance of improving the f for early mental treatment, and as I have frequently I hope to be able to take the necessary action as soo is practicable to introduce legislation.

Regional Medical Officers and Drug Prescriptions.

Mr. SHORT asked the Minister of Health wheth special sum was allocated for the payment of dru scribed by panel doctors; whether he was awar regional medical officers had recently brought pressur panel doctors respecting their prescriptions and t limiting their discretion in prescribing medicines for patients, and that the East Sussex Insurance Com at its meeting on July 3rd, expressed its view that a tioner should not cease to prescribe drugs which he b to be reasonably necessary for the adequate treatm panel patients; and if he would explain the nature instructions given to regional medical officers o matter.—Mr. CHAMBERLAIN replied: As regards th part of the question, I would refer the hon. Member reply given to a question on April 4th. I am aware views expressed by the East Sussex Insurance Com The duty of insurance practitioners is to prescribe and sufficient medicines, and the purpose of the inte arranged between certain practitioners and regional m officers is solely to secure that this duty is performe

MONDAY, JULY 30TH.

Welsh Board of Health.

Mr. JOHN asked the Minister of Health if the reas the change in the composition of the promotion bo the office of the Welsh Board of Health was due alleged internal difficulties; and whether he had re complaints with regard to the action of the pro board in recommending promotions.—Mr. CHAMBE replied: The answer to both questions is that troul regard to promotion have been part of the interna culties of the past, and that the change in question to me the best way of securing a better position future.

Analysts and Food and Drugs Adulteration Bill.

Mr. CECIL WILSON asked the Minister of Health wh in regard to the Food and Drugs (Adulteration) Bil consultation had taken place with the Institute of Chen or the Society of Analysts, or other similar bodies; a not, for what reason.—Mr. CHAMBERLAIN replied: N As the object of the Bill is not the amendment bu consolidation of the existing law, its preparation purely legal matter, and it was not considered necess consult the bodies mentioned. I understand, hov that the Society of Public Analysts communicated wit Joint Committee on Consolidation Bills, and tha Committee considered the Society's views on the Bill.

Sewage Effluvia and Public Health.

Mr. LOOKER asked the Minister of Health whether h aware that the effluvia coming from the sewage di works of the West Kent Sewerage Board constitu menace to the health of the inhabitants of the par West Thurrock; and if he would take steps in the mat Mr. CHAMBERLAIN replied: I am not aware that th any menace to health from this cause. I understand officials of the District Council and the Sewerage have been conferring on the subject and I am ascert the position.

TUESDAY, JULY 31ST.

Use of Preservatives in Cream.

. THOMAS KENNEDY asked the Secretary of State for and if he had considered any representations made to by the distributors of fresh cream in Scotland regarding oss involved in the observance of the regulations biting the use of preservative in cream ; if he was aware arge quantities of cream sent daily from the creameries nfit for use before it reached its destination ; that as sequence tinned foreign cream was rapidly taking the of home-produced double fresh cream in the Scottish et ; that the foreign cream was inferior in food value ; efore the passing of the present regulations a harmless minute quantity of boron preservative was allowed, was sufficient to keep cream in perfect condition for days or more ; and if he would now consider the desira- of suspending the regulations referred to.

. WESTWOOD asked the Secretary of State for Scotland had received any communication from the distributors sh double cream drawing his attention to the effect e prohibition of the use of 0·04 per cent. of boron vative in cream ; and, if so, what action, if any, he sed in the interests of farmers, distributors, and the al public.—Sir J. GILMOUR replied : Representations e various points mentioned in the questions have been ed but, for reasons which I have already given, I am repared to suspend the operation of the Preservative lations in regard to double cream. This matter has long and carefully considered and the Scottish Board alth are satisfied that if proper attention is given at ages to the production of milk and the handling and t of cream it ought to be possible to market fresh e cream in a sound condition. In regard to the sug- n that the amount of preservative added to double before the regulations came into operation was ess and minute, I would point out that the amount was 0·4 per cent., and that the Departmental Com- on Preservatives reported against the use of boric n foodstuffs in the interests of public health. So far ncerns the interests of farmers, the National Farmers of Scotland and the Scottish Agricultural Organisa- ociety have passed resolutions in favour of the pro- n of preservatives in cream.

Short Measure in the Sale of Milk.

. LOUGHER asked the President of the Board of Trade er, in respect of the sale of milk, he could state the of the delay in issuing regulations to enable adequate l to be maintained in connexion with methods of milk bottles ; and whether he was satisfied that the were at present adequately guarded against short re being supplied.

onel ENGLAND asked the President of the Board of if he was now operating the section of the Weights leasures Act which prescribed the use of milk bottling measuring machines ; if so, when this section of the ecame operative ; and what steps had been taken to it out.—Sir P. CUNLIFFE-LISTER replied : There is t of Parliament which prescribes the use of milk g and measuring machines, but draft regulations ng to such machines the general provisions of the ts and Measures Acts are now under consideration small committee representative of local authorities ther interests concerned. I hope to be able to issue aft shortly for public information. In the meantime ovisions of the Sale of Food Act, 1926, which makes offence to give short measure, are available for the tion of the public.

Grants for Supply of Milk and Nourishment.

. THURTLE asked the Minister of Health the total t of economy in Exchequer expenditure he expected ct by his proposals to local authorities to cut down grants for the supply of milk and nourishment in ion with maternity and child welfare work.—Mr. BERLAIN replied : It is estimated that the total amount Exchequer grants payable to local authorities in t of their expenditure for this purpose during the t financial year will be about £12,000 less than would been the case in normal circumstances.

Sun Helmets for Police Constables.

t.-Commander KENWORTHY asked the Secretary of for the Home Department if he would consider the f an approved type of sun helmet, especially to con- employed on traffic control in the middle of the during hot weather.—Sir W. JOYNSON-HICKS replied : uestion has been considered, but our summers are so short and changeable that it has not hitherto hought necessary to provide any special sun or straw s. When the weather is hot, orders are given for the al of chin straps, and if the heat continues the question further considered.

Vacancies.

For further information refer to the advertisement columns.

Barry Accident and Surgical Hospital.—H.S. At rate of £200.
Bath, Royal United Hospital.—Asst. H.S. £100. Also H.S. and H.P. Each £120.
Belfast, City and County Borough of.—Med. Supt. O.H., &c. £2000.
Bolton, Townleys Hospital, Farnworth.—Second Asst. M.O. £225.
Bootle, Bootle Borough Hospital, Derby-road.—Sen. M.O. Also 2 Jun. M.O.'s. Each at rate of £150 and £125 respectively.
Brighton, Royal Sussex County Hospital.—H.S. £150.
Bristol Royal Infirmary.—H.P.'s, H.S.'s, also Dental H.S. Each at rate of £80.
Cardiff, Prince of Wales' Hospital.—H.S. £100.
Cardiff, University College.—Lecturer and Demonstrator in Anatomy.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. H.S. £100.
Chester County Mental Hospital.—Fourth Asst. M.O. £350.
City of London Hospital for Diseases of the Heart, &c., Victoria Park, E.—H. P. At rate of £100.
City of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.
Coventry, Coventry and Warwickshire Hospital.—Res. H.P. £125.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.P. At rate of £125.
Exeter, Royal Devon and Exeter Hospital.—Hon. Asst. Surgeon to Ear, Nose and Throat Department.
Glasgow, University of.—Gardiner Chair of Physiological Chemistry.
Great Yarmouth General Hospital.—H.S. £150.
Ilkeston, Borough of.—M.O.H. and School M.O. £800.
Infants Hospital, Vincent-square, Westminster.—H.P. At rate of £75.
Leeds, City of.—Asst. M.O.H. for Maternity and Child Welfare. £800.
Leeds, St. James' Hospital.—Res. Deputy Med. Supt. £450.
Liverpool University.—George Holt Chair of Pathology. £1200.
Manchester, Baguley Sanatorium.—Asst. M.O. £350.
Market Drayton, Salop, Cheshire Joint Sanatorium.—Asst. M.O. £250.
Newcastle-upon-Tyne, Wooley Sanatorium, near Hexham.—Asst. M.O. £350.
Newcastle-upon-Tyne, Hospital for Sick Children.—Hon. P. to Skin Dept.
Nottingham Children's Hospital.—Res. H.P. At rate of £150.
Nottingham City.—M.O.H. £1440.
Poplar Hospital for Accidents.—Radiographer. 10*s.* 6*d.* per session.
Reading, Royal Berkshire Hospital.—3rd H.S. £150.
Rotherham, Rotherham Hospital.—H.P. £180.
Royal College of Physicians, Pall Mall, East.—Milroy Lecturer.
Tuberculosis Dispensary and Bacteriological Laboratory, 114, New King's-road, Fulham, S.W.—Tuberculosis Officer and Asst. M.O.H. £750.
West Bromwich, West Bromwich and District General Hospital.—Res. H.S., H.S., also Cas. H.S. Each at rate of £200.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Carnwath (Lanarkshire).

Births, Marriages, and Deaths.

BIRTHS.

BAKER.—On July 22nd, at Langton's Meadow, Farnham Common, Bucks, the wife of Ormonde A. Baker, M.B., of a son.

CAIRNS.—On July 29th, at Norfolk-road, N.W., the wife of Hugh Cairns, F.R.C.S., of a daughter.

MARRIAGES.

BREWS—CHURCHILL.—On July 24th, at All Saints', Great Holland, Essex, Richard Allan Brews, M.D., F.R.C.S., to Gwyneth Grace, only child of Rev. J. D. and Mrs. Churchill, late of Little Bentley Rectory, Essex.

KOHNSTAM—DUNN.—On July 28th, at Lewisham, Geoffrey L. S. Kohnstam, M.D., M.R.C.P. Lond., to Helen Lorna Dunn, M.R.C.S. Eng., L.R.C.P. Lond., only daughter of Mr. and Mrs. F. W. Dunn.

MCCULLOCH—WRIGHT.—On July 26th, at St. Ann's Church, Manchester, William Edward McCulloch, M.B., Ch.B., Pathologist, Nigeria (West African Medical Service), to Joan, youngest daughter of the late Ernest Chorley Wright and Mrs. Wright, of Brabyns Cottage, Marple, late of Stretford.

MEEHAN—STRATHDEE.—On July 25th, at St. Sylvester's Church, Elgin, Felix Patrick Meehan, M.B., Ch.B., to Ann Barclay, second daughter of Mr. and Mrs. James Strathdee, "Braehead," Botriphnie, Keith.

DEATHS.

CHANCE.—On July 26th, in Dublin, Sir Arthur Chance, F.R.C.S.I., F.R.C.P.I., F.R.C.S. Edin., in his 70th year.

CURD.—On July 27th, at Forbes Fraser Hospital, after two days' illness, Charles Curd, M.R.C.S., L.S.A., of Gay-street, Bath.

LEES.—On July 22nd, at Breifond, Boyne Park, Tunbridge Wells, Charlie Lees, M.R.C.S., L.R.C.P., L.D.S. Eng., aged 53.

*N.B.—A fee of 7*s.* 6*d.* is charged for the insertion of Notices of Births, Marriages, and Deaths.*

Notes, Comments, and Abstracts.

HERPES ZOSTER AND CHICKEN-POX.

CASES are always being reported in which herpes zoster and chicken-pox appear in the same household, or in which people develop varicella after being in contact with herpes zoster, and vice versa. The isolated examples must now number many hundreds and constitute a formidable obstacle to the dualists who maintain that there is no inherent connexion between the two conditions. J. von Bókay, in 1892, was the first to suggest a common ætiology, and much evidence in its favour has since been adduced. Dr. G. A. Esquier, for instance, has just described a case in which the two conditions appeared simultaneously.[1] The patient was a soldier of 21, who did not report sick until the fourth day of his attack of chicken-pox, when fever and, more particularly, severe pain in his left side, took him to hospital. At that time typical vesicles in all stages of development were found on the scalp and body and—more sparsely—on the face, neck, and buccal mucosa. There were none on the limbs nor on the left side, where the pain was, and on this area typical herpes zoster developed along the seventh intercostal nerve. The zona consisted of vesicles of varying maturity, the youngest being at the end of the nerve, and the oldest near its root. The number of lymphocytes in the cerebro-spinal fluid proved to be 28 per cubic millimetre, and the differential white cell count in the blood showed 42 per cent. of lymphocytes and only 15 per cent. of polymorphonuclear leucocytes. As the crusts fell off, the blood count returned towards normal. Dr. Esquier explains this case by assuming that the virus of varicella can be fixed either in the skin, or in the spinal ganglia, or in a segment of the cord, producing, respectively, an attack of chicken-pox, a herpes zoster, or the "zoster fever" of Landouzy. He feels that the dualist view is based rather on sentiment and theory than on precise, carefully observed facts amd serological proof. In this soldier each chicken-pox eruption was accompanied by an identical herpetic eruption, suggesting very strongly that the two eruptions depended strictly on a common ætiological factor. Dr. R. L. Thorold Grant [2] describes a case of varicella breaking out in a woman of 37 with severe bilateral herpes, and Dr. D. E. H. Cleveland [3] one of herpes in a mother, followed after the correct incubation period by varicella in her daughter, and then, after a second incubation period, the appearance of a typical varicella rash, accompanied by erythema nodosum of the legs, on the mother. Both these cases seem to support the theory of common origin. Again, Dr. von B. M. van Driel [4] had a Javanese man of 28 with a typical varicella rash following a herpes of the left upper arm, and another of 26 with a herpes following a varicella. He made the experiment of inoculating four children of varying ages, and two young men with fluid from herpetic blebs. Except for one of the young men, none of the subjects showed more than a slight erythema at the site of injection; this man fell ill 12 days afterwards with typical varicella. The children might have been expected to remain immune; some would think herpes a more likely reaction than varicella in the young man, but presumably chicken-pox is not endemic in Java.

The arguments in favour of common origin were well summarised by Dr. Flandin in the discussion on the first case. He said that, histologically, the vesicles in the two conditions are identical; biologically, there is an absolute specificity of the fixation reaction between the two; and, experimentally, the inoculation of the contents of herpes vesicles into children who have not had chicken-pox gives the same results as "varicellisation." Inoculation with herpes confers immunity to chicken-pox. Epidemiologically the incubation periods correspond. Dr. M. A. Netter and Dr. Achille Urbain have recently investigated the deviation of the complement in these cases. Out of 100 herpes subjects, of whom 84 had had no apparent contact with varicella, 93 showed deviation of the complement, whether the antigen were taken from varicellar or herpetic vesicles. Similarly the results with varicellar serum were identical with either antigen. These workers concluded that poisons like arsenic, bismuth, and mercury produce herpes by acting as "agents provocateurs" of a virus which up till then had been harboured with impunity by the patient.

At the Brussels Congress in 1926, Flandin suggested that chicken-pox might be an early manifestation—and, indeed, herpes is rare in children—while herpes was the later systematised form, appearing in a subject immu against chicken-pox. On this hypothesis an attac herpes would be a reinfection or the result of a lo immunity from some infectious or toxic cause.

[1] Bull. et Mém. de la Soc. Méd. des Hôp. de Paris, June 7th. Pp. 953.
[2] Med. Jour. Austral., 1927, i., 192.
[3] Can. Med. Assoc. Jour., 1927, xvii., 1299.
[4] Münch. med. Woch., 1927, ii., 1541.

THE TREATMENT OF ACUTE AND CHRO LARYNGITIS.

To the Editor of THE LANCET.

SIR,—Mr. Mollison, in his article on this subject in issue of July 21st, mentions that faulty methods of production should be corrected. May I say that this always include instruction in breathing through the in view of the fact that one of the causes of laryng inhalation of dust.

Most people are under the impression that they breathe through the nose because they do not sit with mouths open when not talking or singing. They d realise that they breathe through the mouth when voca and this means that the air is taken unwarmed, unmois and unfiltered direct into the pharynx, larynx, win and lungs. Few know that it is possible to breathe th the nose without closing the mouth; indeed, many teachers state that it is impossible. At most it is cor that though it *can* be done it involves undue pause a making of a loud sniff. But both these objection obviated if the necessary practice be carried out to the dilators of the nostrils, and the soft palate, activ flexible. Breath can then be taken quickly and silently through the nose with the mouth open.

All voice users should be taught this, and to non more important than to actors and auctioneers, who in places that are laden with dust. If they will instruction in the use of the voice, learn to breathe a through the nose, and follow the direction of their m man to sniff up their nostrils a little of the medicated lient that has been prescribed for them (and which, on in I usually find they forget to do), they will be saved siderable pharyngeal irritation as well as the more laryngitis.—I am, Sir, yours faithfully,

KATE EMIL BEHN.

The Moor House, Lane End, Bucks, July 26th, 1928.

THE COST OF MOTOR ACCIDENTS.

Sir Arthur Stanley last week opened the new out-pa department of the Wolverhampton and Staffordshire pital, which has been erected as part of a reconstru scheme to cost £45,000. He said that figures which had compiled for him showed that the extra cost of motor dents to the hospitals is £250,000 a year, of which £30,000 is recovered from insurance companies. In additi a large reception hall, the new department includes consu and examination rooms for ear, throat, and nose c two consulting rooms for physicians and two for surg with four examination rooms; rooms for the treatme fractures and orthopædic cases; a small operating the sterilising and anæsthetic rooms; a recovery room eight beds for use after minor operations; an isolation and a venereal diseases department.

Corrigendum.—In our report last week (p. 189) o International Conference on Cancer, subject, "Diagn Methods," the remarks attributed to the Chairma closing the discussion were actually made by Sir Wi Willcox.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &

WEST LONDON HOSPITAL POST-GRADUATE COLL Hammersmith, W.

TUESDAY, August 7th.—10 A.M., Medical Regis Medical Wards. 2 P.M., Mr. Addison: Operat 2 P.M., Dr. Shaw: Medical Out-patients.

WEDNESDAY.—10 A.M., Dr. Owen: Medical Diseas Children. 2 P.M., Dr. Scott Pinchin: Medical patients. 2.30 P.M., Mr. Donald Armour: Visit.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurolo Department. 2 P.M., Mr. Donald Armour: Operat 2 P.M., Mr. MacDonald: Genito-Urinary Departm

FRIDAY.—10 A.M., Dr. Pritchard: Medical W 12 noon, Dr. Ironside: Clinical Demonstrat 2 P.M., Mr. Sinclair: Surgical Out-patients.

SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose and Operations. 10 A.M., Dr. Owen: Medical Diseas Children.

Daily 10 A.M. to 5 P.M., Saturdays 10 A.M. to 1 Medical, Surgical, and Special Departments. O tions, Anæsthetic Course, &c.

St. Cyres Lecture

ON

ART AND CIRCULATION IN A TROPICAL AVITAMINOSIS (BERI-BERI).

vered at the National Hospital for Diseases of the Heart, London,

PROF. K. F. WENCKEBACH, M.D., F.R.C.P.

(From the First Medical Clinic, Vienna.)

ORTY years ago, as a young doctor in my own ıtry, I was intimately acquainted with the two ch scientists, Pekelharing and Winkler, who, as a rnment committee, had studied beri-beri in the ch Indies. In those days nothing was known of etiology; my authorities believed it to be an tious disease. Eykman and Grijns had not yet overed its causation, but many of its clinical ures had been described, and it was generally wn that, to quote a British poet—

> "Beri-beri is very, very
> Hard on the nerves——,"

moreover, very "hard on the heart" also. I greatly impressed by the astonishing facts that ents seem to die of complete failure of the right t only; that the opinion (accepted as a dogma) that this heart failure must be due to a degenera- of the vagus nerve; that patients may die 24 s after having been in seemingly good health; there was an "idiopathic" hypertrophy of the le heart with evident lack of contractile strength he chief characteristic; and that vitamin B had raculous effect on a heart which refused to react ny cardiac drugs—all these facts suggested to the existence of some quite peculiar morbid ess. Some seven years ago I explained this rtant problem to a young friend, Dr. Aalsmeer, turer on internal medicine at the medical school native doctors at Surabaya (Java). He devoted od deal of time and interest to the question and autumn returned from the Dutch Indies with plete clinical records of the cardiac aspect of disease. These data, illustrated by X ray ographs and electrocardiograms, provide us a veritable "natural history" of the circulatory ratus in beri-beri cases.

SE, SYMPTOMS, AND TREATMENT OF BERI-BERI IN GENERAL.

ıe generally acknowledged ætiology lies in the nce of an accessory food factor (vitamin B), ained in the bran of rice and cereals. The se makes its appearance where polished rice is exclusive diet. Proof of this pathogenesis is shed by the results of the sole treatment—viz., ion to the diet of vitamin-containing foodstuff, as rice-bran, bran extracts, or a certain bean, n in Japan for over ten centuries (*Phaseolus atus.* Malayan: katjang idjoe). Even in very e cases it relieves the serious symptoms. The ipal pathological changes are:—

Degenerative processes in the peripheral ous system, damaging and even destroying the heral motor and sensory, as well as the sympa- c and parasympathetic elements. The symptoms hose of extensive polyneuritis.

Anasarca and serous effusion in the large ies. In chronic cases there may be a condition treme general atrophy and dryness of skin and es, the so-called "dry form."

Heart disease, characterised by general feeble- of the circulation, palpitations on the slightest ion, swelling of the liver and œdema, with al swelling of the limbs. This heart failure ry often the cause of death.

CLINICAL ASPECTS OF HEART AND CIRCULATION.

I rely on the work of Aalsmeer, correlating it with the earlier work of Vedder, Castellani, Chambers, and Manson, in English; of Scheube, Nocht, and Mense in German; of the Dutch authors Pekelharing and Winkler, Kieviet de Jonge, de Langen; and the many Japanese contributions, culminating in the important work of Shimazono, whose conceptions are in many respects identical with those of my collaborator.

The following points may now be taken as well established:—

1. From the beginning of the disease the whole heart, right and left, is enlarged; X rays show not only an enlargement to the right, but also bulging of the left auricle in the so-called "taille" (left upper border) of the heart shadow. The left ventricle, too, is clearly larger than normal. It is impossible to decide whether, in this first period, the enlargement is due to dilatation alone or to hypertrophy of the muscle wall also.

2. This enlargement and corresponding failure of the heart increases more or less rapidly, sometimes in a few hours, *but chiefly involves the right heart.* The prevalence of right heart failure and right heart widening and hypertrophy is mentioned by everyone who has studied the disease at the bedside and post mortem. A remarkable clinical manifestation is the disappearance of the apex-beat and the substitution for it of a curious wriggling, fluttering motion of the heart muscle, which the patient himself feels and which is easily seen on inspection and felt by palpating with the whole palm of the hand.

3. Increasing stasis takes place in the liver and venæ cavæ, and in acute cases this causes an enormous, painful swelling and bulging of the liver, ascites, and sometimes sudden death.

4. Even in the most serious cases there is never any irregularity of the heart, no extrasystoles, flutter, or fibrillation. The electrocardiogram never shows any disturbance of stimulus conduction. The ventricular complex is perfectly normal, and the size of the different waves rather exaggerated, the only peculiarity being a certain degree of preponderance of the right ventricle.

5. The pulmonary circulation is completely free from any sign of stasis, œdema of the lungs only showing itself in the last moments before death. There is no other disease of the lungs, no true emphysema, no arterio-sclerosis or spasm of the pulmonary arteries, which might cause right heart failure.

6. Apart from variations in the course, dependent on the relative intensity of neuritic manifestations on the one hand and of cardiac disease on the other, two forms of beri-beri are generally recognised—namely, a chronic and an acute, so-called pernicious and usually fatal form. The latter is now much less often seen than it used to be, since specific treatment has almost abolished it.

7. The whole series of heart remedies and diuretics (digitalis, strophanthin, caffeine, theobromine, thyroid, novasurol, salyrgan, &c.) is of no real use for the beri-beri heart. Vitamin B alone is an immediate and usually complete success. At autopsy the heart shows enlargement of its cavities and apparent hypertrophy of its walls, both much more pronounced in the right side of the heart. Microscopically there are no striking changes in the heart muscle-fibres and no inflammation.

DILATATION AND FAILURE OF THE RIGHT HEART.

The first unsolved problem of the beri-beri heart is the extreme widening and failure of the right heart in contrast with the relative smallness of the left ventricle and the absence of pulmonary stasis. This seems the more enigmatic, as there is proof that both sides of the heart suffer at the beginning of the disease. The soft and frequent pulse, however, the curious wriggling motion of the enlarging heart, and the progressive over-filling of the proximal parts of the venous system (v. cavæ and liver), are undeniable signs of the heart's incapacity to convey the whole quantity of affluent blood from the

venous into the arterial side of the vascular system. Clinical experience has taught me *that in such cases of increasing insufficiency of the whole heart the right heart is doomed beforehand to suffer much more than the left, and even to suffer to the profit of the latter.* If the strength of systole is decreasing in both ventricles equally, the moment will come at which both ventricles will fail to discharge their contents completely. A larger amount of residual blood than normal is retained in the heart. This larger post-systolic ventricular blood volume, together with a normal onflow of blood during the diastole, must necessarily result in a greater filling of the heart at the beginning of the next systole. This increased load will soon become too much for a heart already unable to discharge a normal quantity of blood. The output will become smaller and smaller, the filling of the arteries will be less, and the diastolic filling of the heart and the venous stasis before the entrance port of the heart must both increase. This being so, two factors will establish a marked difference between the right and left heart.

The first of these is the anatomical inequality of the two ventricles, the right being of lighter build, and provided with a thinner wall. The tricuspid valves are implanted on a much weaker ground than the mitral; there is no strong fibrous ring supporting them, they are condemned to share the distension of the right ventricle, and consequently are more liable to incompetence. Once this incompetence is established, blood passes from the right heart backwards into the veins and liver and the arterial output of the right ventricle is greatly reduced.

A still more important factor is at work. In the blood stream, moving "quasi in circulo," the right heart is located higher up the river than the left. As a consequence, the right heart has to deal under all circumstances with the whole volume of blood returning from the periphery to the heart, *the left heart not receiving more blood than the right heart is able to transmit.* Consequently the right heart is all the time struggling for life against an ever-increasing overfilling and widening, but the left heart is spared a similar burden. *The more the right heart suffers and fails, the safer the left heart becomes*, working under easy conditions and decreasingly threatened by such factors as might lead to overfilling and dilatation.

In such circulatory disturbances, despite a smaller output of the left heart, this smaller minute volume will reach the great veins and the right heart in due time. This holds good even in severe degrees of mitral stenosis, in which an extremely high arterial blood pressure may be maintained. Even after the final standstill of the heart in the first moments of death this function of the arterial wall (perhaps the last of life) is maintained, so that post mortem the arteries are found empty and the venous system filled. Therefore a smaller supply of blood to the aortic system cannot be expected to relieve the difficulties of the right heart in the same way as a smaller supply to the pulmonary arteries relieves the left heart.

These explanations make it possible to understand the cardiac and circulatory phenomena of beri-beri, the initial widening of the whole heart, the ever-increasing bulk of the right heart, the ever-decreasing cardiac systolic output, and the progressive engorgement of the proximal venous system, venæ cavæ, and liver. It is now easy to see how in acute attacks of beri-beri a sudden failure of the right ventricle with tricuspid incompetence puts the great veins and the liver under systolic ventricular pressure. These are distended to the highest degree and sudden death ends a condition of extreme suffering, the horror of which was so dramatically described by Manson in his handbook of tropical diseases. Throughout this unsuccessful struggle of the right heart the lung fields on the X ray plate are quite clear; there is no lung stasis, no râles, and no pulmonary œdema, and the left heart is not greatly enlarged but, on the contrary, is smaller and poorly filled. A small and rapid, but fairly palpable, pulse gives proof of the relative competence of the left ventricle, until at the last moment before death the latter loses its systolic power, succumbs, and leaves the lungs with stagna blood and signs of ante-mortem œdema.

This simple mechanism, which explains the w circulatory complex of beri-beri and the post-mo findings, has great importance for general c ology. The so-called safety-valve action of tricuspid valve, hepatic stasis relieving the from threatening high tide, is familiar to a number of us, but well-defined conditions functional heart disease, involving both sides of heart equally, are rather rare. They may be fo in the course of acute infectious diseases (pneumo diphtheria, and others), but here so many diffe toxic and reflex influences complicate the pic that the separate influence of each is not e discriminated. Another condition in which sides of the heart are hampered in their actio exactly the same extent is rapid paroxysmal ta cardia and auricular flutter and fibrillation. otherwise normal hearts it has been possible to s that here also there is marked stasis in the l veins and liver coincident with absence of stasis, râles, and dyspnœa. Since James Macke discovered the change of circulation caused by onset of what he called auricular paralysis, known as fibrillation, in long-standing mitral sten we have been acquainted with sudden, pai swelling of the liver; from personal experience change is often accompanied by a striking impr ment in respiration, and relief of the suffoca dyspnœa.

Once I recognised this mechanism, I was abl find it in a great many cases of slowly progres general myocardial weakness. Careful treatm with well-apportioned doses of digitalis and diure may cause lung œdema and swelling of the live disappear, even in extreme conditions, but only a time. These intervals, during which equilibr between the right and left heart is maintained difficulty, become shorter and shorter, until at treatment fails and the patient dies in a few ho In many of these cases of recurrent heart failure first and chief symptom is a rapid and very pai swelling of the liver. Even in rapidly fatal c the same symptoms may be found, râles and œdema only showing themselves during the hours of life.

In all these conditions the curious relation between right and left heart failure may be recogni but nowhere is it so uncomplicated, so regular, so easily demonstrable as in the beri-beri heart. T there is a law of circulatory correlation between two sides of the heart which may be formulate follows: *In equal and increasing feebleness of whole heart muscle the patient suffers most and from the failure of the right side of the heart only.*

Shimazono and Aalsmeer do not accept the ventional view that degeneration of the vagus fi is the cause of the heart failure. Consider dilatation of the heart may be present long be the first manifestations of polyneuritis. Ther no parallelism between the degree of degenera of nerve-fibres and that of the heart affection; ind it is the strong, apparently still healthy pat who seems to be most liable to the serious suc acute attacks, in contrast with the patient whose symptoms are those of palsy from polyneu Aalsmeer is probably right in thinking that relatively good nerve-fibres of the strong man en him to undertake an amount of exercise which too much of his already weakened heart and ind the sudden attack of heart failure.

This vagal factor being unacceptable, we h to seek other clinical facts that would reveal the potent unknown factor of this disease. The hint is given by reasoning that, in our explana of the development of myocardial failure in beri-b there seems to be no place for the hypertrophy of heart muscle so often described. Why should muscle that from the very beginning is showing the signs of reduced contractile force and lesse output become hypertrophic? Such conceptions

pertrophie passive par faiblesse du myocarde," the individual fibres becoming weaker . . . an mpt is therefore made to compensate by increasing number of fibres—i.e., hypertrophy," do not idate the problem. The only way out of the culty seemed to be to look for another explanation he post-mortem findings of increased weight of whole heart and increased thickness of the muscle s.

alsmeer found that, even in the worst conditions ilure, the beri-beri heart gives a perfectly normal rocardiogram, without arrhythmia, extrasystoles, rotopic rhythms or disturbance of conductivity in bundle or in the conducting fibres of the ventricle. ; fact reminded me that the old observations lacWilliam record non-contracting heart muscle iout disturbance of conductivity. Thirty years Engelmann found that the frog's heart muscle n immersed for a short time in water loses its ractility but retains its excitability and its power imulus conduction, showing that this phenomenon, overed by Biedermann in voluntary muscle, s good also for heart muscle. Later de Boer onstrated that the swelling of the heart muscle, ed by the water, reduces mechanically the con- tile power of the muscle-fibre, but at the same the electrocardiogram may continue completely anged. Skramlik, Lusanna, Zondek, and Kraus onstrated the same phenomenon for other forms of r retention in muscle-fibres, and even found that size of the waves of the electrocardiogram may nlarged and the rate of conduction increased. presence in beri-beri also of this strange contrast een evident weakening of the heart muscle and undisturbed or accelerated automatic excitatory esses suggests that here also *the nature of the tion might be water retention* ("Quellung") *with quent swelling of the heart muscle-fibres*, and that swelling, rather than a true hypertrophy, may be cause of the increased weight and thickness of heart muscle wall as found post mortem.

The Water Retention Hypothesis.

ny arguments support this hypothesis. A few hs ago Tiemann showed that striated, in contrast smooth muscle-fibres, swell in water and in all rtonic solutions. The gain in weight and the ing, due to the quantity of water taken up, is in heart muscle than in common voluntary le. If the same process is at work in beri-beri ould expect to find the skeletal muscles swollen he same time as the heart. This swelling is, ct, typical of the disease, especially at the ning, long before general tissue œdema or of nerve degeneration appear. Swelling is most icuous in the muscles of the calf, which are very ul in walking and on being pinched. Pekelharing, ler, and Nocht compared the condition with "pseudo-hypertrophic stage" in progressive ular atrophy of childhood.

this hypothesis we should expect that no nent can succeed which does not free the heart e from its surplus water and drain the muscle- When vitamin B is given, the heart rapidly ishes in size and recovers its power of con- on, and the skeletal muscles share in this ss. The hard, thickened, and painful muscles e calf melt away, as snow in the sun, to es of normal size and function. De Langen, s new monograph on beri-beri, mentions this disappearance of the swelling and equally cure of the motor paralysis, less than 24 hours aking vitamin B-containing food. This remark- improvement is accompanied by a marked se in the secretion of urine. Scheube states that ng idjoe had the reputation in Japan a thousand ago of being a good diuretic. Of recent years iuretic action of rice-bran and katjang idjoe en specially investigated by Japanese scientists.[1] the extensive work on the regulation of water nge by Magnus and by the Vienna Pharmacological Institute (E. P. Pick, Molitor Baer) we learn that striated muscle may take up and, under certain circumstances, can retain large quantities of water injected into the blood or taken by the mouth. Our muscular system may be regarded as one of the biggest water reservoirs, and its contents do not appear on the balance of intake and output.

Recent research work by Tsunoda and Kura[2] gives important information concerning the anatomy and treatment of beri-beri. In pigeons exclusively fed on polished rice the sensory nerves and their endings in the skin show curious primary regressive metamorphosis accompanied by swelling and other changes in their microscopical appearance. After the injection of small doses of vitamin B all these changes and their clinical consequences disappear rapidly. The endings of the sensory and motor nerves improve rapidly within five hours after the injection. Twenty-four hours later the histological appearance is practically normal.

The conception of water-retention in the heart muscle-fibre explains all the symptoms and peculiarities of the beri-beri heart, which thus constitutes a hitherto unrecognised and unique form of heart muscle disease. Before trying to bring this curious pathogenesis into relation with other well-known facts of physiology and general pathology, I must mention an equally unique phenomenon in the symptomatology. Not only is the electrocardiogram normal during the whole course of the disease, but the rate of conduction is increased and the atrio-ventricular interval is shortened. Moreover, conduction quickens as the heart failure progresses. In the most serious and acute cases the shortest atrio-ventricular intervals were found when the patient seemed to be in imminent danger of death. With recovery the conduction slowed down to normal, even with slowing of the rate of the heart beat. The fact that the same phenomenon was found experimentally in water-swelling of the heart muscle is a strong argument in favour of the identity of this condition with beri-beri heart.

Theoretical Considerations.

It seems very probable that water-retention may be the primary cause of other manifestations of beri-beri and, in the first place, of the important degenerative processes in the whole peripheral nervous system. We have already seen that the swelling of nerve-endings in chicken beri-beri disappears completely a few hours after vitamin treatment. The microscopical anatomy of nerve-fibres and ganglion cells in beri-beri accords well with this conception, and it should not be forgotten that although motor and sensory paralysis may be found, as in polyneuritis, the primary affection of the nerve element in beri-beri is not inflammation. It is the general opinion that the anasarca is not so much secondary to heart failure, as essentially an imbibition process of the tissues. Other organs may show temporary swelling at the same time. Some of the glands seem to possess a special predisposition for this kind of water-retention in beri-beri, just as striated muscle is the first tissue to swell while smooth muscle escapes. A familiar pathological finding in this disease is swelling of the mucous lining of the gall-bladder. Kieviet de Jonge mentions a curious broadness of the face, recalling parotitis, and he found that there is enlargement of both parotid glands, the nature of which, he says, is "not œdema." Stepp thinks it probable that some of the glands, especially those secreting saliva, ceased to function.

It would be astonishing if beri-beri were the only disease in which water-retention directly damaged the heart. When an ailing heart does not react to heart drugs we generally suspect a desperate anatomical and functional condition of the myocardium; it seems possible that the cause found in beri-beri plays a part in the development of such events and might be removed by analogous forms of treatment. The first disease to remember in this connexion

[1] Japan Jour. of the Med. Sciences, 1927, viii.

[2] Virchow's Archiv, 1928, p. 267.

is myxœdema, where there is water-retention as a consequence of insufficient thyroid secretion ("Quellung"), and where water is expelled ("Entquellung") by thyroid treatment. A case of atypical myxœdema may be shortly related here:—

Some 20 years ago a small Frisian community sent a poor man to the medical clinic in Groningen because he was more or less stupid and so easily tired that he was incapable of any bodily work. His face showed a certain degree of imbecility or apathy, and his muscular function was greatly diminished; but his build was Herculean. There was no trace of œdema, the face was not swollen, and the heart seemed normal. The muscles were not only big, but very hard and of abnormal consistence; I thought this might be myxœdema of uncommon localisation. A few thyroid tablets had a most astonishing effect; the firm voluminous muscles that were very painful on pinching became thinner, softer, and fit for use again. On palpation the peculiar sensation of rolling muscle bundles returned, leaving only a few hard nodes, which disappeared in a day or two. In a week's time the normal intellect of the man had returned and he was sent back to his village and advised to take small doses of thyroid indefinitely. To the great satisfaction of his community he proved completely cured and able to do regular work, but with less Herculean muscles.

The absence of heart and nerve lesions, on the one hand, and the inactivity of thyroid in beri-beri on the other, prove that this case was not beri-beri, and the two conditions of different nature.

Another important difference was noted by Aalsmeer. In both diseases there is a greatly increased skin-resistance in the patient to the electrocardiogram; more in beri-beri than in myxœdema. But the deflections of the string are very small in myxœdema and at the least normal, or sometimes much larger than normal, in beri-beri.

These clinical facts point to the quite peculiar and specific nature of the swelling of the striated and heart muscle, which is certainly not a condition of œdema.

Heart Hormones and Automatins.

Our subject forms a bridge between scientific research at the bedside and modern experimental work on heart "hormones" (Haberlandt) and "automatins" (Zwaardemaker). Rigler[3] found that vitamin B, isolated as a pure chemical substance by Jansen and Donath, belongs to this group of substances. He believed it to be identical with histamin. The fact that the organism itself produces substances which are able to bring an experimentally stopped heart and its automatic functions back to life has already induced experimental workers to recommend these substances for the treatment of heart patients. The beri-beri heart shows that at least in some rare conditions the revival of a seemingly lost heart is possible. There are doubtless a great number of different conditions causing standstill of the heart, and doubtless we shall hear, in the course of time, of a great number of different substances which may help. The beri-beri heart shows that not every heart that stops its systolic action has lost its regular automatic vital function. The automatism may go on undisturbed, but is prevented from manifesting itself by lack of conductivity or, as in beri-beri, by interference with contractility. In such cases the active substance which restores the regular function should not be called an automatin; what happens in the heart is not revival from death, but release from bondage.

Summary.

My subject shows eloquently that careful study of the sick and their symptoms, and free experimental research are equally indispensable to the advancement of medicine.

It teaches us the existence of a law of circulatory correlation between the left and the right heart, working along simple mechanical lines of considerable clinical importance.

It leads us towards the better understanding of a disease, of which the successful treatment had already been found by experience at the bedside.

It brings us into close contact with the most modern biological problems of water exchange, of hormones, of sudden death, and revival of functions.

It seems permissible to formulate the hypot that the fundamental process in beri-beri is w retention and the consequent swelling of ce vital tissues, especially nerve and striated musc

[3] Med. Klinik, 1928.

THE LATER RESULTS OF PARTI GASTRECTOMY.*

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Few subjects have received more attention or been the cause of intenser controversy during r years than that of the nature and treatment of g and duodenal ulceration. From the surgical poi view the discussions have, for the most part, r around the relative merits of partial gastrectom gastro-enterostomy. It is not proposed in article to consider partial gastrectomy as a treat for new growths—for here the obligations o surgeon are sufficiently clear—but to limit the r to cases of apparently non-malignant ulceration.

It will be well at the outset to summaris standpoints taken by the several schools of thou the present day. (1) The first school believe operative treatment should never be adopted i absence of acute complications such as perfora they maintain that the symptoms can be adeq controlled by purely medical measures. For ob reasons this group consists almost exclusive physicians. (2) The second group comprises who think that operation may be occasionally ju in very persistent cases, and especially in the pr of such complications as pyloric stenosis. Int group fall many physicians and a few surgeon have been unfavourably impressed by the recu of symptoms or the onset of jejunal ulceration gastro-enterostomy. (3) The majority of E surgeons belong to the third group and favour g enterostomy for chronic cases, after medical trea has been given a trial, but would treat all acute medically. (4) Others advocate gastro-enteros with or without pyloric exclusion, for practica cases. (5) Yet another school consider that f majority of cases of gastric ulceration partial ga tomy is indicated, but perform gastro-enterosto duodenal disease. (6) The last school believe gastrectomy to be the operation of choice in all and would always perform it for both gastri duodenal ulceration if the technical difficulties a insuperable.

With such diversity of opinion the only safe is a critical and, as far as possible, unbiased exa tion of the results. Since this article will dea with the surgical aspect it is essential, as a pro to give reasons why the claims of the first schoo surgical treatment is unnecessary, cannot be tained. Unfortunately, perhaps, for the sur proper judgment, the great majority of the upon which he operates have already recei prolonged course of medical treatment, a circum likely to prejudice his opinion of these claims. discovery of signs of old healed ulcers is offset presence of the fresh outbreak for which the ope is undertaken. The treatment therefore, even i cases, has done little more than allow the o ulcer to heal without removing the cause. mortem evidence of completely healed ulcers is, experience, much rarer than that found at ope for a fresh outbreak; it thus appears reasona conclude that medical treatment can rarely about permanent cure. Moreover, relief of sym is not necessarily accompanied by cure of the

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he list of possible surgical procedures is a long one, each operation has its advocates and indications. 'osterior gastro-enterostomy. 2. Anterior gastro-rostomy. 3. Gastro-enterostomy with pyloric usion or entero-anastomosis. 4. Finney's opera-. 5. Local excision by knife or cautery. 6. Local sion and gastro-enterostomy. 7. Sleeve resection. 'artial gastrectomy (Billroth 1 and 2; Polya and nodifications). 9. Jejunostomy. 10. Denervation. hese only gastro-enterostomy and partial gastrec-y will be compared, the indications for the others ng outside the scope of this article.

Data.

he cases reviewed occurred in the author's practice ng the five years 1922–27, and none of less than year's post-operative history are included. The l number of gastric operations was 221, and of e 65 were partial gastrectomies and 71 gastro-rostomies; the percentage of gastrectomies, ever, rose from 5 per cent. in the first year to er cent. in the final year under review. In the instance inquiry was made by a circular letter ding a series of simple questions designed to come any reluctance on the part of the patient to rd unsatisfactory results; for previous experience shown that patients hesitate to state slight nveniences.

s many patients as possible were then personally viewed and re-examined; plenty of volunteers found for additional investigation by bismuth , test meal, blood counts, bacteriological tests, &c. his way the subsequent history of a considerable ber has been obtained in detail, with records of ltimate results of the special tests. In classifying results, those who, in addition to giving entirely factory answers to the questions, added enthusi-comments about their health, were called isfactory++." Those who answered all ques-s in a gratifying manner without comment were ed as "satisfactory+." Where the patient had ved complete relief of symptoms but complained tly of occasional fullness and constipation the t was called "satisfactory." Patients who stated were better but still had attacks were "unsatis-ory," while patients with recrudescence of ptoms or development of fresh ones were "unsatis-ory+." One of the questions related to the type od taken, and unless the reply was that all foods taken without restriction the patient was not ed in the "satisfactory" group. Of the 65 gastrec-es 8 were subsequently proved by section to arcinomatous ulcers, and have therefore been d in a separate table.

Partial Gastrectomies for Simple Ulcer (51). Result in Percentages.

++ 76	95	Unsat.	2·5
+ 19		Unsat.+	0
.. .. 2·5			

Partial Gastrectomies for Ulcers Proved Carcinomatous (8).

e died as result of operation and 2 subsequently currence. Of the remainder 3 are satisfactory++ 2 satisfactory+.

Gastro-enterostomies for Simple Ulcers (61). Result in Percentages.

++ 45	51	Unsat.	21
+ 6		Unsat.+	15
.. 12			

us 95 per cent. of the partial gastrectomies have ymptoms of any sort and are able to take all of food without restriction, and 51 per cent. he gastro-enterostomies come into the same ory. Only 2·5 per cent. of the gastrectomies nsatisfactory, but 36 per cent. of the gastro-ostomies fall under this heading. There can o doubt, therefore, that from the point of view omplete and permanent relief of symptoms ectomy is a much more satisfactory operation gastro-enterostomy, although 63 per cent. of patients treated by the latter method are cured or improved.

The mortality figures rather counterbalance this satisfactory conclusion, for 6 of the gastrectomy cases died within four weeks of the operation, 2 of hæmorrhage, 2 of pneumonia, and 2 as the result of gastric fistula following the Billroth 1 type of anastomosis. Both these last two were debilitated patients with enormous ulcers (one malignant) very adherent to surrounding structures, and no other procedure seemed possible. The Billroth 1 operation is notoriously liable to leakage if there is the slightest tension on the anastomosis, which is difficult to avoid after an extensive resection. It is legitimate, therefore, to exclude these from the ordinary mortality. They come early in the series, and with additional experience it is certain that they would now either be left alone or treated by jejunostomy. The other four cases constitute a mortality of 6·3 per cent., a figure capable of reduction, probably to half, with care. On the other hand, there was no mortality in the gastro-enterostomy series. Further analysis of the mortality figures gives the following:—

	Per cent.		Per cent.
Gastro-enterostomy	0	Billroth 2..	7·5
Sleeve resection	20	Billroth 1..	100
Polya	0		

The 20 per cent. for sleeve resection is obviously misleading, as there were only five cases in the series and the death of one from hæmorrhage was due to the use of catgut subsequently found to be defective. According to these results the Polya would appear to be the safest type of gastrectomy, but the total number of each type performed must be taken into consideration.

Gastro-enterostomy without perforation	61	Polya	18
		Billroth 2	40
Sleeve	5	Billroth 1..	2

Even then the Billroth 2 operation is found to have the greater risk, but there was no mortality when it was performed in two stages. The further statistics of the gastrectomy cases are as follows:—

Male 46 .. Average age, 39		Incidence of	13 per cent.
Females, 17 .. „ 44		carcinoma cases	12 „

The types and position of ulcers were: gastric (body) 12, gastric (pyloric) 5, duodenal 6, doubtful (pyloric) and not mentioned 21, multiple 6, jejunal 7, carcinomatous 8. This list only records the position of the chief ulcer and does not take any account of healed scars or other small ulcers. Had these been included the percentage of multiple ulcers would have been about 90.

After-results of Gastrectomy.

All the gastrectomy cases have gained weight since the operation, some of them as much as 3 st., and they all look remarkably healthy. In one or two cases there appears to have been an excessive deposition of fat, and two mentioned the development of an abnormal desire for highly spiced foods.

Practically all the cases had fractional test-meals carried out shortly after operation, and with one exception showed complete achlorhydria. Those taken after an interval of several years demonstrate quite conclusively that the achlorhydria is permanent. None of them showed the slightest trace of free hydrochloric acid. The average total acid was less than 10, and the average total chlorides in the absence of bile 29; when bile was present this rose to over 70. Typical examples are given in Figs. 1 and 4. Bismuth meals, also conducted after a long interval, show that the remnant of stomach undergoes considerable increase in size; emptying is rapid, never taking longer than an hour and usually much less. The stoma in the Polya and Billroth 2 operations lies more or less horizontally, and is fairly well defined in the radiograms. There is no radiographic evidence of any effect upon the movements of the small or large intestines.

Blood examination revealed a high count corresponding to the patient's appearance of health; no

case showed less than 4,800,000 red cells. The average of all the counts gives—

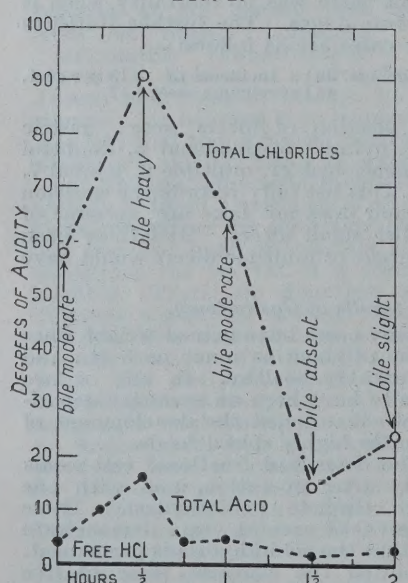
Red blood cells	5,250,000	Eosinophils	1·5 p.c.
Hæmoglobin	91·2 p.c.	Basophils	0·5 ,,
Colour-index	0·84	Large hyalines	5·4 ,,
White blood cells	7,160	Lymphocytes	30·4 ,,
Polymorphs	61·8 p.c.		

Bacteriological examination of the teeth, gums, tonsils, and throat in a series of cases yielded streptococci in several, but in no case were they hæmolytic.

The reasonable deductions from these statistics are that gastrectomy gives much more satisfactory ultimate results than gastro-enterostomy; that it has a mortality of about 7 per cent., whereas there is no mortality from gastro-enterostomy; that jejunal ulceration does not occur after gastrectomy, whereas a proportion of the gastro-enterostomies have symptoms suggestive of such ulceration, and subsequent gastrectomy has sometimes been necessary for definite jejunal ulceration. The exact incidence of jejunal ulceration in the gastro-enterostomies is uncertain because some cases with suggestive symptoms have not been explored, but if we include these the percentage is over 10. The gastrectomies include a large percentage of the more difficult and serious cases with extensive ulcers penetrating surrounding structures, while the gastro-enterostomies include most of the cases of simple duodenal ulceration where the operation was easy.

The total number of jejunal ulcers is too small to allow any definite conclusions, but the accepted idea, that they occur more frequently after duodenal ulceration, is supported, while excision of the original ulcer at the time of operation appears to make no difference to their incidence. Some competent observers deny that jejunal ulceration is rare after gastrectomy, and also state that its incidence is as high after gastro-enterostomy in those cases that show no post-operative acid as in those where acid remains high. There are objections to both these arguments against the importance of hydrochloric acid in the ætiology of jejunal ulceration. It has been definitely established that some patients were not achlorhydric after gastrectomy owing to the very limited resection performed, often little more than a pylorectomy. In the author's experience those cases of gastro-enterostomy which show little or no acid after operation will be found to have had very little acid to start with; this usually means that the ulceration is almost always multiple and of long duration, with the development of a secondary atrophic gastritis (Fig. 2). Under these circumstances the anastomosis may actually be made at the site of mucous ulceration, a condition which would naturally predispose to the development of jejunal ulcer. It will also be obvious that unless the total chlorides are estimated it is impossible to state whether the achlorhydria is due to neutralisation or lack of secreti In the former case there is no guarantee that test-meal is an accurate indication of the acid cont (or its absence) after ordinary diet.

FIG. 1.



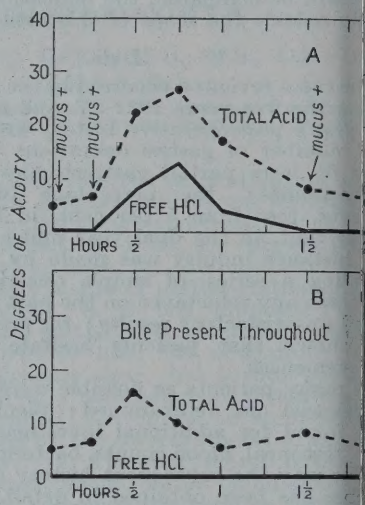
Test-meal after partial gastrectomy. The effect of the presence of bile upon the total chlorides is well seen.

If it be agreed that the results of partial gastrecto are much better than those of gastro-enterostomy, following questions arise: 1. Is the mortality of par gastrectomy justifiable? 2. Are the results p manent? 3. Are there any remote effects of the removal of large portions of the stomach? 4. In what way does gastrectomy act?

The Alleged Deleterious Results of Gastrectomy.

In the series under review the oldest cases have more than six years' post-operative history, while quite a large proportion have more than three years. It may be doubted whether even these periods constitute a true test of permanency, especially since many cases of jejunal ulceration after gastro-enterostomy do not become urgent many years (certainly more than ten). Neverthel most patients complain of premonitory sympto within a limited time (usually a few months) of operation, whereas the gastrectomy cases all expr themselves as entirely free of any warning sympto Their general state of health, too, is patently inco patible with continued ulceration. It may be accept therefore, as the result of actual experience, that good results obtained are permanent in the practi application of that term.

FIG. 2.



Curves obtained before operation (A), after operation (B), in a case of prolon multiple gastric ulceration with atro gastritis, showing the small acid cont before operation (gastro-enterostomy v cauterisation of the ulcer). The ach hydria is chiefly due to neutralisat which would probably not be so comp after an ordinary meal.

It has often been suggested that untoward rem effects may follow partial gastrectomy, especially all the cases have complete achlorhydria. T relationship of achlorhydria to pernicious and ot anæmias has been thought by some to be one of ca and effect; for this reason the blood examinati made some considerable time after the gastrecto are particularly interesting. No case shows any s of primary anæmia, but the hæmoglobin and colo index are rather below normal; the total leucoc count is normal, the polymorphonuclears be perhaps slightly low. It can therefore be stated w confidence that this series affords no evidence of a deleterious effect of achlorhydria upon the blo count. (Cases of malignant ulceration must obviou be excluded; some of the discrepant results obtain in the past may possibly be explained by failure separate malignant and simple cases.) No patient known to have died since the operation, so that a subtle intangible lowering of the resistance to ot diseases, especially infections, can be excluded. T stools were not examined bacteriologically, but th were no clinical signs of any abnormal infectivity the intestinal contents, nor was there any radiograp evidence of nervous or chemical interference with t action of the small or large intestine.

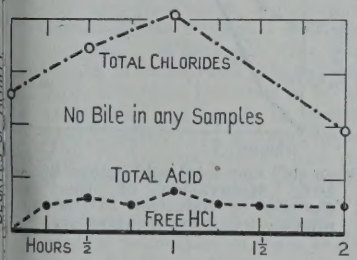
The tendency to excessive deposition of fat in t cases could conceivably be due to some alteration the metabolism of food, but is probably more correc

plained as an inability of the tissues, often long rved, to deal efficiently with the sudden excess of d products with which the patient, now relieved of pains, supplies them. In other cases it may be rely the resumption of the patient's normal build l habit. The slight qualitative change in appetite orted by two patients may be due to the removal of arge sensory area from the stomach mucosa, but s too vague and trivial to warrant much attention. On the whole, then, it seems that there is not an a of evidence that any remote deleterious effects ow gastrectomy. Indeed, the patients appear to in a much better general state of health than they l been for many years.

The Mortality of Gastrectomy.

The definite, if small, mortality associated with trectomy cannot be dismissed so easily. In this es the gastrectomies include all the most difficult es, while the mortality associated with any sequent operation for jejunal ulceration (notorily difficult to treat and usually demanding partial trectomy under the worst circumstances) should remembered in estimating that of gastro-enterosy. With these modifications the difference in the rtalities is much reduced, some say equalised. All ussions of mortality are, however, futile until type of case for which the operation is to be ted is defined. Those who recommend gastrectomy all cases of duodenal and gastric ulceration agree t the mortality is little greater than that of gastroerostomy with its later complications; those who t the operation to large gastric ulcers state ectly that such conditions are very serious at the t and that, provided the mortality is small, the ration is amply justified. The mortality is able of further reduction; probably the surgeon's experience is the most important factor, but greater pre- and post-operative care are possible. Transfusion, special dieting, attention to oral sepsis, and especially the postponement of operation upon any signs of infection of throat or lungs should never be neglected. In erious cases the operation should be a Billroth 2, ormed in two stages with a suitable interval.

FIG. 3.

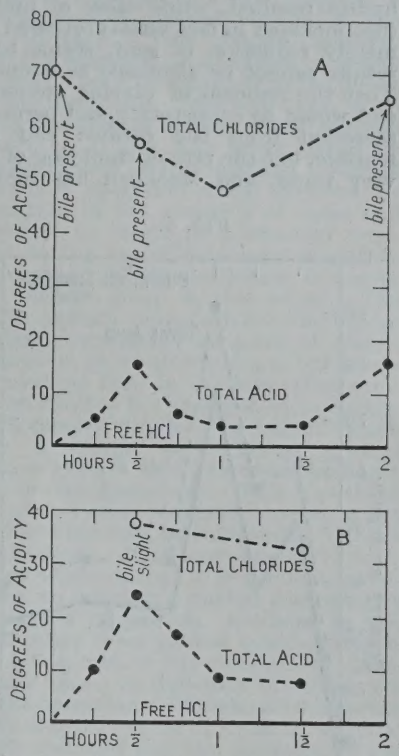


-meal after partial gastrectomy, owing achlorhydria and low total lorides in the absence of bile, indicating at achlorhydria is not merely a estion of neutralisation.

fter the operation every precaution must be n to prevent chest complications. The value of nsive splanchnic and field block anæsthesia is otful; it was used in a large percentage of these s without any effect upon the incidence of chest plications, though it probably rendered the alescence smoother. In most cases the general sthetic was intratracheal ether or chloroform, and e was no noticeable difference in the effects upon lungs. There is no doubt that post-operative eumonia" in these cases is due much more to the ring of vitality and interference with upper minal movement than to the type of anæsthetic, hat speed, facility of access, and clean, gentle ipulation are of great importance. The other es of mortality are definitely avoidable by ation to technique, and there is no reason why it ld rise above 2 or 3 per cent. If such a figure be oached there can be no doubt that the operation t only justifiable but actually advisable instead of o-enterostomy.

mong other arguments in favour of gastrectomy is avoidance of the risk of subsequent malignant change in the ulcer. Some cases not included in this series definitely prove that such a change can occur, even after gastro-enterostomy, but it is certainly uncommon, and the high percentages given by some observers are undoubtedly founded upon a misinterpretation of the premises necessary to establish a diagnosis of malignancy. If malignant change were common, any series of gastro-enterostomies should show a fairly large subsequent mortality from this cause; even if it be assumed that gastro-enterostomy largely prevents malignant changes, a percentage of the cases will be unknowingly malignant when operated upon. The cases of carcinoma included in this series were for the most part only definitely diagnosed microscopically after removal. The conclusions are: (1) that malignant change can occur in ulcer, although it is probable that the majority of carcinomata start de novo; (2) that a certain number of cases, apparently of ulcer, will be found definitely malignant upon microscopy. These are obviously arguments in favour of gastrectomy, but neither event is common, and I would not stress them.

FIG. 4.



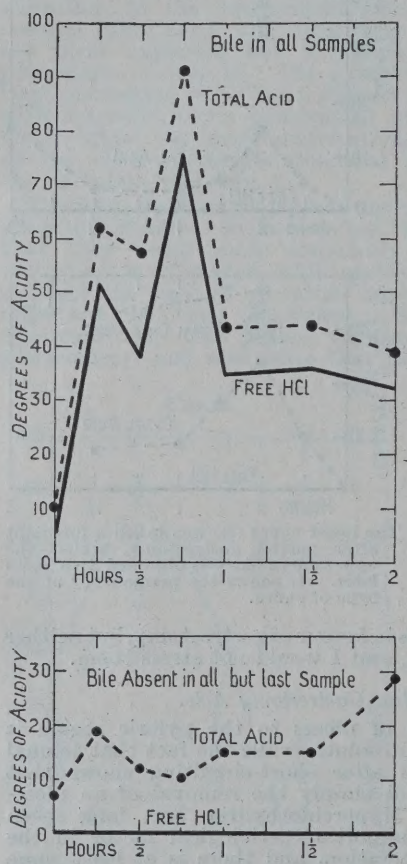
The lower curve (B) was taken a fortnight after partial gastrectomy, whilst the upper curve (A) was obtained two years later. It shows the permanency of the type of curve.

How Gastrectomy Acts.

The limitation of ulcers to the pyloric region is marked, but not absolute, while the fact that jejunal ulceration occurs after short-circuiting shows that gastrectomy is not simply the removal of an ulcer-bearing area. Hyperchlorhydria has long been accepted as an important ætiological factor in the production of ulceration, and there is at least some association between the two. Accordingly it is assumed that gastro-enterostomy produces its effects by neutralising the acid with the alkaline contents of the jejunum. The post-operative test-meal curves show positively that there is an essential difference between the effects of partial gastrectomy and gastro-enterostomy. The gastro-enterostomies show merely a reduction in acidity (Fig. 5), while the gastrectomies reveal complete absence of free hydrochloric acid. This is not simply due to more effective neutralisation, for the total chloride is always very low in the absence of obvious bile or mucus (Fig. 3). This raises a point of some importance in the physiology of the stomach, for it can only be explained by assuming: (1) that the pyloric half of the stomach is the only portion capable of secreting acid—this is at variance with ordinary physiological teaching; (2) that the operation so profoundly modifies the general activities of the stomach, either by nervous reflex or locally, that the remaining cardiac half permanently ceases to secrete acid. Recent work upon the control of

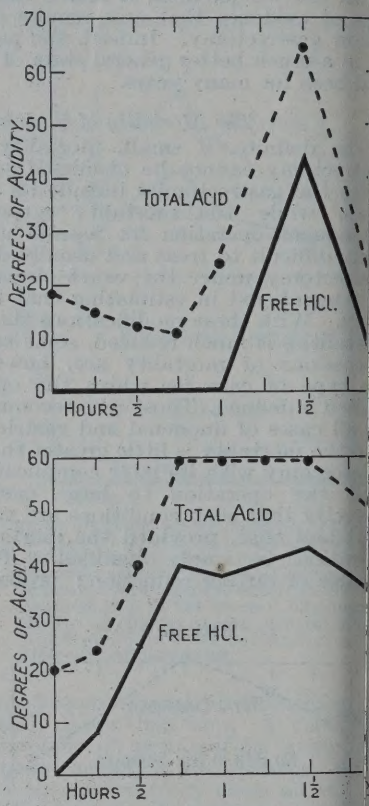
secretion, the secretion of neutral chlorides, and the effect of duodenal regurgitation has amply shown that the whole question is much more complicated than was formerly believed; I hesitate, therefore, to draw dogmatic conclusions upon what may easily prove to be inadequate data. Whatever the laboratory findings, however, these clinical facts demand recognition and critical examination. The fact that where the whole of the pyloric half was removed, no matter how much of the cardiac portion remained, complete achlorhydria resulted, while cases of limited pylorectomy (not included in this series) revealed in every instance merely reduction of acid, seems to prove that the results cannot be dismissed as erroneous or fortuitous. That the removal of varying amounts of the pyloric end would so consistently and permanently affect the secretion from the cardiac end scarcely appears feasible, but the rate of emptying of such a stomach is very rapid, and MacLean has recently shown that "the gradual decrease in acid concentration in the stomach during the completion of ordinary digestion in normal dogs is a function of the stomach itself, and in no way dependent upon regurgitation of alkaline duodenal contents." It may be that the absence of secretion is also an intrinsic "function" of the stomach when its general physiology is disturbed by the performance of a gastrectomy. A nervous reflex effect is excluded by the fact that sleeve resection, in which the division of nerves is almost as extensive as in the usual partial gastrectomy, is not followed by achlorhydria. The same applies in greater degree to definite denervation operations of which a typical post-operative curve is given (Fig. 6). The simpler suggestion—i.e., that the acid-secreting portion is removed—is probably the correct one. The physiological teaching with which this disagrees is chiefly founded upon experimental work on dogs, the results of which should only be applied with great reservation to human beings. The histological evidence of the presence of acidophile cells in the cardiac glands is also inconclusive, for it may be argued that the cytoplasm of a cell secreting acid would be left on the alkali side of neutrality. The intimate physiology of the cells is not sufficiently understood for us to dedu the exact chemical changes which occur in t cytoplasm. A test-meal after partial gastrectomy not without difficulties and uncertainties, and t results may be due to the collection of material fro the jejunum rather than the remaining stomach. T characteristic curves given here, especially the effect of bile upon the total chlorides, and the general uniformity of results over a series of cases, suggest, however, that they are not the result of technical errors.

FIG. 5.



The upper curve was obtained 16 years after performance of posterior gastro-enterostomy, and shows that despite admixture of bile the free acid still remains high. At operation the pyloric ulcer was found to penetrate surrounding structures: the whole pyloric end of the stomach, including the anastomosis, was excised, and a fresh Polya type of anastomosis was performed to the cardiac end. The lower curve shows the resultant achlorhydria, occurring despite absence of bile. These curves demonstrate the profound difference between the effects of gastro-enterostomy and gastrectomy.

FIG. 6.



Free HCl and total acid curves before after denervation of the stoma showing no reduction in free acid alteration in general character.

Those who believe that hydrochloric acid bears an ætiological relationship to ulceration find in this result a ready explanation of the success of partial gastrectomy. The growing school, however, who regard acid and ulcer as concurrent effects of an unknown cause will still be at a loss. On the whole, the evidence derived from these cases of gastrectomy is rather in favour of reinstating acid as an important ætiological factor which may, of course, and indeed probably is, itself secondary; for not o is the abolition of acid the most conspicuous res of the operation, but the rarity of subsequent jeju ulceration is also best accounted for in this w (Some believe that this result is due to the remo with the original ulcer of the possibility of infect of the suture line. As we have already se however, excision of the ulcer with gastro-enteroste is not followed by immunity.)

The activity of pepsin is commonly ignored considering the ætiology of ulceration, largely account of the difficulties of quantitative estimatio enzymes, but it would probably be more accurate use the term "pepsin hydrochloric acid" in place plain "hydrochloric acid" throughout. The idea t the pyloric end of the stomach is responsible in n for the production of acid deserves the attentio physiologists. It certainly fits in satisfactorily w the division of the stomach into two function separate portions, a view supported to some extent morphology and by radiology, the cardiac end be considered merely as a storehouse for food ta intermittently at meals, from which the activ digestive pyloric end is slowly and continuo supplied with pabulum.

Predisposing Conditions for Ulceration.

There has, in the past, undoubtedly been too g a tendency to think of gastric and duodenal ulcera

a local isolated lesion, a tendency which is reflected the embolic theory and others where the microscopic atomy of arterial distribution is held responsible. reful examination of the ulcerated stomach or odenum shows the great frequency of multiple eration, of the recurrence of ulceration at fresh es, and of healed ulcers. These findings are especially portant when founded upon the investigation of the rts removed by gastrectomy, or even better when n in the live subject through a gastroscope (an strument which the author has frequently used in ese cases), for there can then be no suspicion of st-mortem effects. It is not going too far to state at almost all cases with prolonged histories afford idence of multiple ulcers, either active or healed. e are not dealing with a lesion of local origin but th some condition of the stomach which predisposes ulceration, and of which the ulcer itself is but a nifestation. The occurrence of jejunal ulceration er gastro-enterostomy for ulcer, and its absence er the same operation for carcinoma, favour the w that the contents of the stomach are responsible. e limitation of duodenal ulceration to the first rtion, where it is exposed to the stomach efflux, y be also evidence (admittedly equivocal) of portance of the contents. Yet the distinction tween wall and content is not perhaps so great as may seem, for the content is made up of two parts— ingested food and the added secretion from the ll. The evidence given in this article, although omplete, is in favour of a change in the contents the exciting cause of ulceration, and this can aceivably be brought about (1) by changes in the ture of the secretion, and (2) by changes in the food ten. Once again we meet the relationship between psin hydrochloric acid and ulcer, for increase of d secretion is the most constant and conspicuous ange in the contents. Why a stomach should rete these materials in excess is difficult to see; ne authorities, on the evidence of test-meals, deny at they are in excess, but the ordinary test-meal ly estimates the strength and not the quantities of d secreted. When all the clinical and experimental work is examined it must be admitted that the sociation between the two is so close as to resemble se and effect. Change in secretion, both quantitive and qualitative, is experimentally produced by erations in the nature of the ingested food. The ssical work of Pavlov showed that there is a ychical as well as a direct secretion, the former ing stopped by nerve section. The importance of psychical secretion in man is difficult to estimate, t it may be the secret of the alteration in gastric retion. It is certainly intriguing, and perhaps not olly fantastic, to assume that the flagging appetite civilisation, with its sedentary occupations and nomy of manual labour, is abnormally stimulated the consumption of highly flavoured and spiced ds with the plentiful addition of condiments. ese substances, including the extractives, are own experimentally to produce a copious psychical retion of gastric juice. Pepsin hydrochloric acid y therefore be produced in large excess of that ely to be absorbed by the meagre quantity of food ten. The acid curves after the usual test-meal of iel are not those which might be expected to low the ingestion of a full meal, nor would it be at easy to estimate the free acid in such a complicated xture. Duodenal ulcer is said to be commoner ong sedentary workers, and the symptoms are rticularly prone to recrudescence during periods of ntal strain and anxiety when the appetite fails; same may be said of the symptoms attributed to perchlorhydria without ulcer formation. This ory assumes that the stomach is constantly being ceived into producing more secretion than is needed, al in the course of time develops the habit of essive response. The success claimed for denervan operations may be partly due to the abolition of chical secretion, although simultaneous cutting-off the motor control and sensory supply renders finite conclusions impossible. The post-denervation test-meal curve given here shows little change, but of course it makes no pretence of representing the psychical secretion. If the habit of hypersecretion ultimately becomes an intrinsic function of the stomach denervation would produce little effect in established cases. So little is known, however, of the nervous control of the stomach in man and of the effects of denervation that it would be unwise to dogmatise.

Summary.

Ulceration should be regarded as a local incident in a much more fundamental general change in the functions of the stomach. This change, however produced, leads to the secretion of an excess of pepsin hydrochloric acid which may be regarded as the direct exciting cause of the ulceration. The acid may, in an uncertain and irregular fashion, be somewhat reduced by gastro-enterostomy; it can only be abolished by removal of the pyloric half of the stomach. Partial gastrectomy is the only operation which removes the cause of the ulceration in the majority of cases and which can be trusted to result in permanent cure. (Some may object to the use of this word when the affected part is excised.) This conclusion is amply borne out by the details given in this paper. The author has not quite enough courage in his convictions to subject to partial gastrectomy all cases of gastric and duodenal ulceration at whatever stage, but treats early cases upon medical lines in the hope that some change may thus be effected in the secretory activities of the stomach. In cases of simple duodenal ulceration of short history a partial gastrectomy appears unnecessarily severe when a safe gastro-enterostomy so frequently relieves the symptoms. This is perhaps not illogical, for in such cases the acid content is not always high and may therefore be sufficiently reduced by partial neutralisation. If the pre-operative test-meal reveals a high acid content it is probably wise, even in these cases, to perform a partial gastrectomy and so escape further ulceration, perhaps in the jejunum. For all other cases partial gastrectomy is the operation of choice, and, if the presence of adhesions, penetration of ulcer, or difficulty of access will obviously render the operation a difficult and dangerous one, the possibility of anastomosis of jejunum with the cardiac half of the stomach and the resection of the pyloric end at a subsequent operation, as in the Billroth 2 method, should be seriously considered. In this way an operation, otherwise serious, may be rendered comparatively safe. Where gastro-enterostomy has already been performed without relief of symptoms, partial gastrectomy holds out a very good hope of cure; indeed some of the most gratifying cases in the series come into this group. In the absence of jejunal ulceration it is sometimes possible to utilise the gastro-enterostomy aperture, the pyloric end being excised as in the Billroth 2 operation. Where the original anastomosis has been performed towards the pyloric end, or where jejunal ulceration is present, the whole is excised with the stomach and a fresh anastomosis made, usually by the Polya method. The former is a very safe procedure, but the latter may in some difficult cases demand the utmost dexterity and care.

Ulcers in the cardiac half of the stomach are not so uncommon as is sometimes thought. Where the ulcer is capable of local excision, without danger, this should be done, combined immediately or subsequently with partial gastrectomy. Where the ulcer cannot be excised removal of the pyloric end is nevertheless indicated. This method of treatment has been adopted in several cases with complete relief of symptoms, and definite radiographic evidence of cure of the ulcer.

No reference has been made to the actual cause of the pain, since this is outside the scope of the article. If, as is probable, it is due to irregular muscle tension and abnormal intragastric pressure (in the absence, of course, of penetration of surrounding structures), a partial gastrectomy must correct both, as it produces immediate relief of symptoms. Relief of symptoms, however, does not necessarily imply cure of the ulcer,

as shown by the cases of hæmorrhage and perforation which occur after gastro-enterostomy has produced complete relief of symptoms. For this reason special emphasis has been laid here upon the actual cure of ulceration and prevention of recurrence rather than upon the mere relief of symptoms.

I wish to acknowledge my indebtedness to Mr. E. Crook, surgical registrar, Charing Cross Hospital, who has taken infinite pains in the collection of the statistics and the carrying out of post-operative inquiries; to the staff of the Institute of Pathology for their chemical (Dr. J. Patterson) and pathological (Dr. A. B. Rosher and Dr. Berry) investigations, and to Dr. Russell Reynolds and Dr. Cochrane Shanks for the radiographic work.

THE STANDARDISATION OF SCARLET FEVER ANTITOXIN

BY CLINICAL METHODS.

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THERE are four methods in use for the standardisation of the scarlatinal streptococcic toxin and antitoxin. Three of these are clinical tests for which the human volunteer is necessary; the fourth is a method, recently described by Parish and Okell, which tests the potency of scarlatinal antitoxin in protecting rabbits against the intravenous injection of whole cultures of *Streptococcus scarlatinæ*. Laboratory animals are relatively insusceptible to the toxin of *S. scarlatinæ*, and this last method, while it serves to "differentiate efficient therapeutic sera from inefficient," lacks the accuracy with which the dosage of diphtheria antitoxin, for example, may be estimated. Whereas 0·002 c.cm. of diphtheritic toxin is an average lethal dose for a guinea-pig, 20–40 c.cm. of scarlatinal toxin, representing 500 times the quantity of toxin which will produce the scarlatinoid syndrome in man, are required to kill a rabbit. Nevertheless, any laboratory method which may compete in accuracy with the clinical tests for the standardisation of scarlatinal antitoxin must be the method of choice for various reasons. The tests can be carried out by competent technicians in the laboratory where the toxin and antitoxin is being prepared; the supply of animals is not limited like the number of human volunteers, and the individual variability is probably much less in the rabbit than in man.

The three clinical methods by which standardisation of scarlatinal antitoxin may be attempted are: (1) by the utilisation of the Schultz-Charlton phenomenon; (2) by passive immunisation; and (3) by the so-called skin method. It is proposed to give a short description and discussion of the results obtained from the use of these methods, and to discuss shortly their relative merits and limitations.

The Schultz-Charlton Test.

The serum of an individual convalescent from scarlet fever, or artificially prepared scarlatinal antitoxin, injected into the skin of scarlet fever patients while the rash is still bright, causes a blanching of the skin at the site of injection. In the application of this phenomenon to the diagnosis of scarlet fever (using a 1 : 10 dilution of antitoxin) a positive reaction is evidence of scarlatina, but a negative result does not quite exclude the infection, since some scarlet fever rashes are not blanched. Moreover, the test is least reliable where its use is most indicated—namely, in faint and otherwise atypical eruptions. It has, however, a useful application in the standardisation and comparison of scarlatinal antitoxins.

Method.—In the performance of the test dilutions c 1 : 1000 to 1 : 32,000 of the sera were used, since an antitoxi which does not cause blanching in a dilution of 1 : 100 is of little therapeutic value. Children of 5 to 15 year with bright finely punctate rashes gave the best results the abdomen is the most suitable site for the tests, an 0·4 c.cm. of the serum dilution was found to be an appro priate dose for injection. Usually four tests were don on each patient: two different antisera were compared, an two dilutions of each were used. If, for example, a dilutio of 1 : 4000 but not 1 : 8000 of antitoxin A causes blanching and a dilution of 1 : 8000 of antitoxin B causes blanching the antitoxins can be standardised, and it is establishe that serum B has double the therapeutic value of serum A Two sera S.A. 4571 and S.A. 4462 in dilutions of 1 : 100(1 : 8000, and 1 : 16,000 were tested. Antitoxin S.A. 457 gave uniformly positive reactions in dilutions of 1 : 100 and 1 : 8000, but two only out of eight cases tested wer positive with a dilution of 1 : 16,000. S.A. 4462 produce blanching in a dilution of 1 : 1000 with all cases, but onl four out of sixteen and none out of eight patients whe tested with dilutions respectively of 1 : 8000 and 1 : 16,00 gave positive reactions.

Passive Immunisation.

To standardise and compare antitoxins by th passive immunisation of susceptible subjects one c two methods may be adopted: either (*a*) find th smallest dose of antitoxin which will render a Dick positive reaction Dick-negative in 24 hours in patient accidentally exposed to the risk of infection or (*b*) determine the duration of immunity conferre by the injection of a standard amount of the antitoxin The second method was used: 2·5 c.cm., 5 c.cm and in a few cases 10 c.cm. of the serum was injecte intramuscularly into patients who had given definit Dick-positive reactions; these individuals were the Dick-tested at regular intervals of time (24 hours 5, 8, 13 days), until they again became Dick-positive For comparison of the two antitoxins, the test subjects were as far as possible children of the sam age, giving Dick reactions of equal intensity. Eve then, a lack of uniformity in the results may b expected, for the amount of scarlatinal antitoxi already present in the blood is probably not the sam for any two individuals. For instance, the injectio of 5 c.cm. of antitoxin may protect one child for tw weeks, while an equal amount of the same antitoxi may protect another child with less natural antitoxi for one week only.* Table I. briefly summarises th results obtained.

TABLE I.—*Duration of Immunity with* (A) *2·5 c.cm and* (B) *5 c.cm. Antitoxin.*

1. *Antitoxin A.4501.*

A				B			
Cases.	Time after inject.	Dick pos.	Dick neg.	Cases.	Time after injec.	Dick pos.	Dic neg
16	24 hrs.	1	15	8	24 hrs.	0	8
	5 days.	2	14		5 days.	0	8
	8 „	11	5		9 „	3	5
	12 „	16	0		13 „	6	2
					17 „	7	1

2. *Antitoxin A.4462 E.*

A				B			
16	24 hrs.	0	16	14	24 hrs.	0	14
	5 days.	4	12		5 days.	0	14
	8 „	14	2		9 „	4	10
	12 „	16	0		13 „	11	3
					17 „	14	0

The Skin Method.

The test subjects for this method of standardisatio must be, as in the passive immunisation metho susceptible to scarlet fever, and must give a Dic reaction of at least 20 mm. diameter with five skin-tes

* The utility of passive immunisation in affording immediat protection to susceptible individuals exposed to scarlet feve has been discussed elsewhere (Cruickshank, Glasg. Med. Jour. It may be said that in general 2·5 c.cm. of a concentrate antitoxin protects for 3–6 days, 5 c.cm. for 7–10 days, an 10 c.cm. for 2–3 weeks.

es of toxin. In hospital, patients convalescent from ntheria and chicken-pox, and accidentally exposed he risk of infection, were found most suitable for purpose.

ethod.—Measured volumes of the toxin diluted to contain skin-test doses in 0·2 c.cm. were mixed in vitro with equal ntities of antitoxin in dilutions of 1 : 100 to 1 : 1000. r standing at room temperature for one hour, 0·2 c.cm. hese toxin-antitoxin mixtures—each containing five -test doses of toxin—was injected intradermally; a rol test with toxin alone was also done. The mixture h reduces the reaction from 20 mm. in size to less t 10 mm. contains sufficient antitoxin to neutralise skin-test doses of toxin. The "therapeutic dose"—amount of antitoxin required to neutralise 20,000 skin-doses of toxin (Dick and Dick)—can be readily calcu-l. Two sera, S.A. 4627 and S.A. 4565, were compared. preliminary dilutions were made with graduated 1 c.cm. ttes, a separate pipette being used for each antiserum for the toxin, and again separate syringes were used the intradermal injection of the different mixtures. abdomen is the site of choice, since half a dozen or e tests can be done simultaneously and the reactions are e definite and measurable there than on the arms.

he results given in Table II. indicate that the eutralising" dilution of antitoxin is 1 : 100.

BLE II.—*The Skin Reaction to the Intradermal Injection of Toxin plus Varying Dilutions of Antitoxin.*

Size of Reaction in mm. Measured in Two Diameters.

ution anti-xin.	S.A. 4627.		S.A. 4565.		Toxin control. 24 hrs.
	24 hrs.	48 hrs.	24 hrs.	48 hrs.	
1000	26 : 31*	30 : 33	16 : 20	25 : 25	32 : 40
800	17 : 23*	17 : 17	14 : 17	17 : 19	21 : 26
400	15 : 23*	18 : 23	10 : 13	15 : 21	24 : 27
200	14 : 17*	22 : 25	11 : 16	17 : 17	34 : 37
100	—	15 : 15†	20 : 22†	20 : 25†	27 : 33

Each of these figures represents the average of four separate ions on four children.
With 1 : 100 dilution of antitoxin only one case showed any ion with both S.A. 4627 and S.A. 4565.

Discussion.

one of the three clinical methods under considera- gave results that were sufficiently delicate and orm to merit recommendation as an accurate and uble method of standardising scarlatinal antitoxin. s might a priori be expected, since the human subject es within wide limits in his response to infection; variation, where scarlet fever is concerned, is bably due, in part at least, to the variable amount natural antitoxin in the blood of different indi-uals. The difficulty could be surmounted by ng the average of a large number of individuals, unfortunately the supply of human volunteers is ted.

n a comparison of the tests, preference must be orded to that method which is the most delicate at the same time gives uniform results. In other ds, a method which will distinguish between the tralising power of dilutions of 1 : 100 and 1 : 200 n antitoxin, or between the antibody content of c.cm. and 5 c.cm. of a serum, is preferable to a hod which can only tell us that a dilution of 00 is more potent than one of 1 : 400 or 1 : 800, hat 10–20 c.cm. of a serum contains more antibody n 2·5 c.cm. The tables show that the results ined by passive immunisation best fulfil the irements, provided that the Dick test be repeated four- to five-day intervals. Taking antitoxin 462E (Table I.), for example, if the patients e Dick-tested only 24 hours after injection of the m it would be impossible to distinguish between protective values of 2·5 c.cm. and 5 c.cm., but t days afterwards, 14 out of 16 individuals iving 2·5 c.cm. were again Dick-positive, compared n four only out of 14 receiving 5 c.cm. of antitoxin. ortunately the passive immunisation method ires a prolonged observation of the test subjects with repeated Dick tests, and, in addition, the injection of serum, which may not be without attendant risks in a sensitised individual. The Schultz-Charlton test can be carried out only on patients with bright scarlatinal rashes. Apart from the small percentage of cases which fail to react to the test, the method gives results which are fairly uniform and delicate.

The skin method, in our hands, failed to differentiate a dilution of antitoxin of 1 : 800–1 : 1000 from a dilution of 1 : 200, so that on the standard of delicacy it failed. The method has certain advantages, however, in that it is fairly easy, the tests are done on susceptible subjects, who require to be under observation for two days only, and the results obtained were more uniform and clean-cut than with either of the two previous methods. It is the method recommended by Dick and Dick, and has been adopted as the official method of standardising scarlatinal antitoxin by the Hygienic Laboratory of the United States Public Health Service.

If these clinical tests be compared with the laboratory test of Parish and Okell, they appear to have some advantage in the differentiation of the relative therapeutic values of scarlatinal antitoxins, but the drawbacks to the clinical tests are such as to give the laboratory test the preference as the method of choice. It must not be supposed, however, that any of the methods at present available is sufficiently accurate to allow a uniformity in the dosage of scarlatinal antitoxin in any way approaching that of diphtheria antitoxin.

I am indebted to Dr. R. A. O'Brien, of the Wellcome Physiological Research Laboratories, for suggesting this piece of work and for advice throughout its course. Most of the material was supplied directly by him.

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ÆTIOLOGY OF HYPERPIESIS IN EGYPTIANS.*

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THE conclusions in this paper are based on a study of over 3000 cases, many of whom were traced for 10 to 15 years. All were seen in private practice, so that they were observed over a much longer period than is possible in a hospital; observations for short periods on a disease which seems to be lifelong are misleading, and give a false idea of its natural course.

Chronic primary hyperpiesis in the absence of chronic inflammatory renal changes is quite common in Egypt, and forms at least 10 per cent. of all cases in private clinics, but is rare in hospital practice. For four years, 1913–1917, not a single case was admitted, and in the following years only two genuine cases could be picked out. The disease is especially limited to the two decades 35–55, and is very rare under 30; the youngest patient was a student of 27 whose father and mother had both suffered from the disease, which appeared in him when he was 23. The condition is rare after 60, and the eldest patient was about 75. About 10 per cent. of the cases are females.

Out of 100 consecutive cases 37 were fellahin of the middle class, 17 were lawyers, judges, and mental workers, 10 were doctors, and 10 females; the rest came from clerical and other occupations, two being railway porters.

* Summary of several addresses given to Kasr-el-Aini Hospital Society and Egyptian Medical Society.

Diet, Nervous Influences, Toxins, and Infections.

That excess of food, especially protein, causes a hyperpiesia is undoubted. The rise is, however, temporary, and the pressure falls gradually and sometimes suddenly as soon as the intake is limited.

A young man of 30, weighing 72 kilos, developed pulmonary tuberculosis and was advised to over-feed. His blood pressure rose from an average of 100/75 to 200/100, and remained up for about six months, during which time his weight increased by 25 kilos. With limitation of diet and graduated exercise the pressure fell to 150/105 in the course of three months, and has remained there till now (three years).

Excess of diet plays a part in acute hyperpiesis in normal subjects or in extra rises (often temporary) in subjects of chronic hyperpiesia. That diet is certainly not the cause of the latter is shown by the fact that 40 per cent. of cases of high hyperpiesia were of normal weight or slightly under. Overfeeding and overweight is by no means always accompanied by rises of pressure, and in women of a certain class, especially at the climacteric, though overweight is common, less than one-fifth have hyperpiesia.

That strong emotional disturbance can cause marked rises of pressure is certain; the effect is, however, temporary, and in no single case was a permanent effect found.

A lady of about 50, previously in good health, with systolic pressure ranging from 120–140 for years, suddenly, after prolonged grief, complained of severe headache, congestion of the face, and asthmatic-like attacks at night. Blood pressure 310/160. No sign of local nerve lesion. Urea 30 mg. or 0·03 per cent. of blood; urine normal. Venesection and elimination treatment with bromides lowered the pressure to 200/100–240/110 in about six days, but the systolic pressure remained about 200 for at least two months in spite of treatment. On separation from her husband (apparently a great mental relief) the pressure fell to 120–150, and for the last year and a half there has been no return to the high figure.

Many similar cases were observed, and in all of them the pressure fell as soon as the nervous condition improved. Nerve storms are important causes of rise of pressure in normal subjects, of extra rises in hyperpietic cases, or even of onset. That they are not the sole cause is shown by the fact that fully one-third of the cases occurred in placid men and women of the middle class with sedentary habits, many of them unable to read or write and having no special complaint. Conversely, hyperpiesia does not necessarily follow emotional states.

That certain substances absorbed from the alimentary tract have a pressor action has been shown experimentally, and some—e.g., isoamylamine, P-hydroxy, phenylethylamine, and phenylethylamine—have been isolated. These and similar substances may be operative in acute cases of hyperpiesia, as shown by the rapid fall of blood pressure (often permanent) on elimination treatment and starvation. In chronic primary hyperpiesia the blood pressure is affected very little if at all by any method of treatment. Formerly, hyperpiesis was looked upon as an untoward sign in all cases, and every effort was made to lower it, including rest in bed for months at a time, repeated venesection, repeated doses of calomel and salines, and strict lacto-vegetarian diet with two starvation days per week. It soon became clear that the resulting fall was slight, and in some cases the pressure actually rose during the treatment—showing conclusively that the rise was not due to absorbed toxins, the amount of which should have been diminished by a very restricted régime.

A railway inspector was seen on several occasions in 1919 with average blood pressure 170/80 and nervous symptoms (fatigue and insomnia) suggesting neurasthenia. With absolute rest in bed and milk diet the symptoms markedly improved, but the blood pressure rose to 220/100. The patient remained in perfect health, and for the next three years his pressure ranged from 200–220. Since then nothing has been heard of him.

The course taken by chronic hyperpietics is a continuous one with few intermissions (extra rise or fall), which would certainly not be the case were the rise due to absorption of toxins, the amount of which would be subject to continuous variations. Ag toxins, whatever their nature, would give rise to o symptoms besides hyperpiesis, but these pati continue generally for years without any sympt at all; some have been traced for 15 years and s with a reliable medical history, for 25 years. Occasi symptoms, such as headache, giddiness, dyspr or asthmatic attacks, can be easily shown to hav relation to the chronic malady. They bear relation to the degree of hyperpiesis, and often o without extra rise of the blood pressure, and in s with a relative fall. They can be relieved by elim tive treatment, which does not affect the heigh the blood pressure, for this is in many cases hi after treatment than before. These symptoms due to absorption of substances with a pressor depressor effect, and have no relation to the orig disease.

An example is afforded by a patient with severe head following trephining for chronic glaucoma, unexpl by the eye condition. The blood pressure varied 220/110 to 230/130, and remained approximately at same height for six weeks; with blood-letting, elimina and starvation it dropped at times to 200, but the head did not disappear. Finally the headache disappeared s taneously, but the pressure has remained at about 240 with occasional rises, until now (2½ years).

Graver and more permanent symptoms w occur in hyperpietics are due to arterio-sclerosi its complications, and not directly to the hyperpi Much, however, may be said in support of the that arterial disease is secondary to the incre pressure.

Syphilis, at times suspected as a cause, certa has no relation to the disease; repeated course bismuth, mercury, and arsenic will change a pos Wassermann to negative without changing pressure. Temporary rises of pressure occu syphilitic subjects, as in normal subjects, but that no relation to the chronic malady.

A history of old infectious fever (typhoid, mal is quite common, but so high is the incidence of the infectious fevers and hyperpiesia that no c relation between them can be established. A not feature is the absence of ankylostoma and pell and, to a lesser extent, of bilharzial infection, dis which are very common in hospital class pati in whom hyperpiesia is almost non-existent.

Alcohol as a cause can easily be dismissed, a majority of patients had never tasted it. Tob seems to lower the tension, and some of the ma hypotensives were heavy smokers (over 40 cigar daily). Excess of coffee seems to be responsibl temporary rises of pressure in normal individuals hyperpietics. No causal relationship can, how be drawn between the amount of coffee taken an degree of hyperpiesis. Some of the marked hyp sives were patients who consumed 40 cups (4·0 g. caffeine) for years, and fully one-third cases of hyperpiesia drank no coffee, or less tha cups daily (1·0 g. caffeine).

The Family History.

The disease is hereditary and social, and in cases familial. In 100 consecutive cases 72 h history in the father or mother, brothers or si uncles or aunts, suggesting death from one o complications of the disease—e.g., a hemipleg death suddenly after a meal (angina pectoris) attack of dyspnœa or fatal epistaxis. This gene occurs in the fifth and sixth decade, and is well k amongst the middle class, who are the chief suff and often a man will come for examination f other complaint than that his father or mother from or was affected with hemiplegia.

In some cases notable family histories occur—e merchant in Upper Egypt (Mallawy), aged 55, seen a ago. His blood pressure ranged from 180/100 to 20 His father died about the age of 60 with coma and plegia; his mother died, when over 60, with hemip Three brothers, aged respectively 50, 48 and 44, all sh pressures between 160 and 200 on several occasions.

Another marked example was that of a merchant af with the disease, whose father, mother, two sisters, an

thers were all affected (except one brother who had umatic endocarditis).

As a control the family history of 100 consecutive es of other ailments was taken, and only 25 per t. gave a history of father or mother being affected h symptoms suggesting hyperpiesia.

ie Relationship between Hyperpiesis and Diabetes.

n families where only one member is affected with perpiesis, a clear history of diabetes is often given, l sometimes some members of a family are affected h diabetes, some with hyperpiesia, and some with h. The relation between diabetes and hyperpiesis very close. Both are diseases of the middle and per classes, and very rare in the poor-class hospital ient. Both run a very long course, and for years re may be no symptoms in the absence of compli- ions. The chief age of onset in both diseases is n 30–40, and the duration of both is approximately same. The majority of hyperpietics die in the ies and 'sixties; diabetics, having better treatment, erally die in the 'sixties or 'seventies. The age onset and duration account for the rarity of perpiesia above 65 and of diabetes above 75. ongst several thousands of hyperpietics seen in years I can only recall nine cases above 65, includ- two between 70 and 80. The same statement ds good for diabetics, if allowance is made for htly increased longevity. Both diseases run their rse in spite of any treatment. This is certainly e of hyperpiesia, and was true of diabetes before days of insulin and regulated diet. Except in te crises treatment of hyperpiesia is useless, and imes dangerous; the rise of pressure is certainly pensatory. Attempts to lower the pressure by esection, elimination, vaso-dilators, diet, &c., were he majority of cases unsuccessful, and in those in m it was lowered temporarily symptoms arose ebral, renal or cardiac), apparently due to the mia which only disappeared on resumption of vious habits. The patient has to choose between ightly prolonged and restricted life and a useful, arently normal, short one, often terminated denly by fatal cerebral hæmorrhage, angina or mic-like symptoms. I certainly do not agree h Clifford Allbutt when he says: "If we catch erpiesis early and keep at work against it, it can cured more often than not."[1] Hyperpietics who not die from complications end with uræmic-like ptoms of auto-intoxication, analogous to diabetic ia. The similarity is so great that I surmise t hyperpiesis is due to a metabolic disturbance scrasia), often inborn and hereditary. Nothing nown about the relation of this disorder to ductless ids. A full trial of thyroid and parathyroid was le for months, and sometimes for years, in suspected s, and the results, though encouraging in a small ber, can only relate less than 2 per cent. of all s to deficiency of internal secretions. One thing ns certain, and that is the relation of the hyper- is to the metabolic change; the rise of pressure ntirely compensatory, and as long as the pressure elatively sufficient no symptoms arise, and the vidual enjoys normal habits. Only when the sure begins to fall do symptoms appear referable he metabolic dyscrasia.

[1] Clifford Allbutt, Diseases of the Arteries, vol. ii.

WESTERN OPHTHALMIC HOSPITAL, MARYLEBONE, AS "DANGEROUS STRUCTURE."—This hospital has been served a "dangerous structure" notice by the district sur- or of Marylebone on the ground that the building ght collapse at any moment like a house of cards," its demolition has been begun. Great difficulty has experienced in finding accommodation for the patients, f whom are awaiting operation. The hospital is an old gian building in the Marylebone-road, very cramped inconvenient, with wards the size of small bedrooms. operating theatre is only a few feet square with a floor ough boards, and a roof which leaks in wet weather; e are no facilities for moving patients after operations. ebuilding scheme to cost £40,000 was prepared some ago, and £23,000 has so far been collected.

Clinical and Laboratory Notes.

A NOTE ON BLOOD CHANGES ASSOCIATED WITH LIVER DIET IN YOUNG CONVALESCENTS.

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AND
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IN order to find out whether the blood changes obtained with liver diet in cases of pernicious anæmia were confined only to that disease, it has been thought worth while to study the blood changes produced by the same diet in hospital patients free from any blood disease. Whereas the original work of Whipple indicated that liver diet was likely to be useful in all forms of anæmia, the first recorded results with liver diet in pernicious anæmia suggested that it was most specific for pernicious anæmia and exerted its maximum effect only in that disease. Recently it has been found by Vaughan[1] and others that some cases of secondary anæmia respond to liver treatment, and we have found that relatively normal children show a transient but definite stimulatory response to liver feeding.

The 11 cases selected for treatment in this investigation were between the ages of 3 and 15 years with the single exception of one girl aged 19. The majority of the patients were in surgical wards and were, during the experimental period, convalescing from such surgical conditions as inguinal hernia, tuberculous adenitis, and submaxillary abscess; others were in medical wards under treatment for such diseases as mediastinal adenitis and oxaluria. On account of the special interest attaching to the blood changes observed in them two cases are included in which the lymphatic system seemed principally affected; these were cases diagnosed as Hodgkin's disease and glandular fever.

Fresh cooked liver was given daily, the amount varying with the age of the patient; the older patients received 3 oz. daily and the younger ones 2 oz. A blood examination was made in every case before starting the diet and the feeding was continued for periods varying between six and 40 days. In the first few cases examinations were made at intervals of three or four days for a period of three weeks, but experience showed that the maximum effect was noticeable after about six days and that it declined thereafter. In no case was hæmatinic drugs given during the time of liver feeding.

The table shows the results with the 11 patients. In most cases the changes in red and white cell counts and in the hæmoglobin percentage have been included, whilst the alteration in the differential leucocyte count are recorded in all. The last two columns show the variations in the granular and non-granular cells in order to contrast the changes in bone-marrow cells with those taking origin from some source other than the bone-marrow. Such observations as were made on the red cells and hæmoglobin show that these tended to increase. A leucocytosis was produced in seven out of the 11 cases. In seven cases also there was an increase in the relative and absolute number of polymorphonuclears. Neither the increase in the total leucocytes nor the increase in polymorphonuclears was maintained for longer than ten days. Lymphocytes showed a relative but not absolute reduction in nearly all cases. A definite absolute increase in eosinophils was produced in all instances, the striking figure of 61 per cent. being found in the case of Hodgkin's disease. An increase in granular or bone-marrow cells was also the rule.

[1] Vaughan, Janet: THE LANCET, 1928, i., 1063.

These results show that the administration of liver to patients who suffer neither from pernicious anæmia nor any other blood disease produces alterations in the blood comparable to those occurring in the treatment of pernicious anæmia. An interesting feature of the series is the eosinophilia which has been also found in pernicious anæmia by one of us (L. E. H. W.),[2] and in secondary anæmia by Vaughan.[1] The definite increase in the red cells and bone-marrow leucocytes shows that liver must exert a stimulating action on the bone-marrow. It is difficult to believe that stimulation is the only action in pernicious anæ though evidently it is one essential feature.

We are inclined to suggest that liver is rich i substance essential for the proper functioning of bone-marrow; in pernicious anæmia, this substa whatever it may be, is not absorbed in suffici quantity from an ordinary mixed diet, perhaps account of the achlorhydria, though it is possible assimilate enough with massive liver feeding.

Case.	Age.	Disease.	Dose in oz.	Days after feeding started.	Blood changes: Red cells in millions; leucocytes in thousands (absolute figures).							
					Red cells.	Hb.	Leucocytes.	Polymorphs.	Lymphocytes.	Eosinophils.	Cells. Granular.	Cells. Non granul
1	3	Submaxillary abscess.	2	6 9	4·85→5·75 4·8	66→66 66	7·6→20·0 16·4	2·4 → 8·6 6·5	4·4 → 9·0 7·85	0·095→ 0·8 1·2	2·6 → 9·4 7·6	5·07→1
2	7½	Cervical adenitis (T.B.).	2	6 9 10	5·3 →6·1 6·3 6·8	80→82 84 86	8·2→21·5 10·6 4·9	3·6 →12·0 5·95 2·1	3·9 → 7·5 3·5 2·5	0·05 → 0·7 0·6 0·1	4·1 →12·8 6·5 2·3	4·1 →
3	3½	Submental abscess.	2	6 13	5·3 →6·2 4·95	72→78	4·3→28·6 23·0	2·4 →16·9 10·9	1·5 → 9·4 10·4	0·1 →10·0 8·0	2·55→17·9 11·7	1·75→1
4	6	Hernia.	2	6	—	—	6·5→10·2	3·9 → 6·45	2·45→ 3·06	0 → 2·5	3·9 → 6·5	2·6 →
5	7	Mediastinal glands.	2	6	—	—	19·2→11·4	9·6 → 5·4	8·8 → 3·9	0·02 → 0·47	10·2 → 5·9	9·0 →
6	5	Tuberculous lymphadenitis.	2	7	—	—	11·8→11·4	8·1 → 7·5	3·1 → 2·9	0·2 → 0·6	8·4 → 8·2	3·4 →
7	9½	Oxaluria.	3	8	5·04→5·8	—	7·4→ 5·6	3·3 → 3·2	3·3 → 1·5	0·5 → 0·6	4·0 → 3·8	3·4 →
8	19	Fragilitas ossium.	3	10	—	—	7·8→13·0	4·4 → 7·0	2·6 → 4·4	0·05 → 0·9	4·8 → 7·9	3·0 →
9	14	Mitral stenosis.	3	15	—	—	16·2→16·8	7·8 → 9·6	7·6 → 5·5	0·4 → 0·5	8·1 →10·0	8·1 →
10	15	Glandular fever.	3	8	4·7 →5·59	75→78	9·8→12·8	4·85→ 6·7	4·2 → 5·1	0·2 → 0·6	5·2 → 7·2	4·6 →
11	9	Hodgkin's disease.	3	18 21 40	3·1 →3·9 4·09 3·9	65→66 74 66	18·6→21·4 16·8 14·0	15·4 → 3·6 3·4 2·8	2·6 → 3·5 4·7 3·1	0·06 →13·0 8·0 3·4	15·6 →16·6 11·6 10·4	3·0 →

We are indebted to Dr. C. E. Lakin, Dr. E. Cockayne, and Mr. E. L. Pearce Gould for the clin material.

[2] THE LANCET, 1928, i., 285.

A COMPARISON OF THE "TITANIUM RAY" WITH THE METALLIC TUNGSTEN ARC.

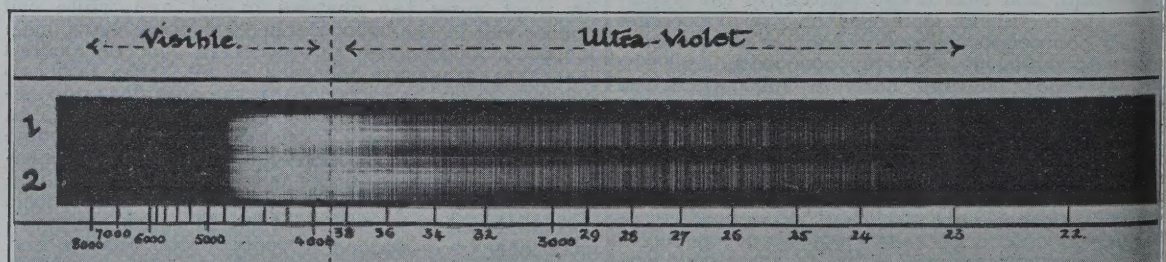
BY B. D. H. WATTERS, M.Sc.

(*From the Physics Department, Middlesex Hospital.*)

CONSIDERABLE interest has been aroused recently by a new arc designed for therapeutic work which is termed the "titanium ray." The arc is formed between metallic electrodes which consist of a tungsten alloy containing, it is claimed, approximately 4 per cent. titanium.

Titanium is a rare metal which occurs in small quantities in a large number of ores, and hence is often present in different metals as an impurity. The characteristic arc spectrum of the metal has a number of intense lines in the ultra-violet region. Samples of the electrodes supplied for generating this arc were obtained and the arc spectrum tested by means of a Hilger quartz spectrometer. For purposes of comparison, the spectrum given metallic tungsten of the quality used in therapeu work was included on the same plate. The pho graph of the two spectra is shown in the illustrati and it will be seen that they are practically ident both in the range of the ultra-violet and the dis bution of the intensity. Detailed examination the plate under a low-power microscope sh certain minor lines as more intense in the "titani ray" spectrum than in that given by commer tungsten. These variations are, however, so sli that the difference in the quality of the radiat from a therapeutic point of view must be conside as negligible.

The print reproduced here was obtained fron single plate containing the spectra of the two sour



The upper spectrum (1) is that of the "titanium ray" and the lower (2) is that of the tungsten arc. Exposure in each cas 30 seconds. (Photographed on an Ilford Process Plate.)

An incandescent filament lamp was used for printi and the distance of the lamp from the plate adjusted so as to bring out the full range of radiations.

A further test was made of the intensity of radiation from the two arcs judged by the product

erythema on the skin. Two small areas of skin ose together on the forearm were exposed consecutively to the arcs running under identical nditions as far as could be done. (Current, ampères; P.D. across electrodes, 58 volts; voltage supply drawn from a bank of large accumulators, 0 volts.) Three distinct pairs of exposures were ade on different days and in each case the erythema oduced by the "titanium ray" and the tungsten c could not be distinguished in depth of coloration d the latent period between the exposure and the pearance of the reaction was the same.

It has been stated that the "titanium ray" is ore penetrating than other sources of ultra-violet ht, but, judging from the evidence of the experiments scribed above, the penetration of the radiation can no different from that of other sources with a nilar spectral distribution.

A CASE OF
ABSCESS OF THE HEART CAUSING DEATH THROUGH CORONARY HÆMORRHAGE.

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A case of abscess of the heart apparently resulting m staphylococcal infection of the skin, and without idence of general pyæmia, is so rare that its descripn seems to be justified. Not only is the occurrence common, but in the case reported death was due rupture of the abscess into one of the coronary eries and the pericardial sac, giving rise to a ndition which simulated, and was at first mistaken cardiac rupture.

The Case Described.

A married man, aged 57, was admitted to hospital under tificate on Jan. 30th. Previous to certification he had n in poor health for some time and his latest occupation l been the somewhat arduous one of labourer. During multifarious pursuits—principally as soldier and stoker e had contracted malaria in Upper Burma and suffered m sunstroke in India many years previously. His dition on admission, however, was not thought to be sequent on these misfortunes. His personal history, related by his wife, showed him to be a man of temperate bits who, four years previous to admission, became weak, s subject to numerous boils and carbuncles, and developed mors of the legs.

On admission he exhibited many old scars, the result boils and carbuncles in the region of the back and legs, only one scar on the upper part of the body, and that the right shoulder. His chest was fairly well covered, the excursions on respiration were limited. No normality of the lungs was apparent on percussion, but auscultation râles and rhonchi were heard to such an ent that the heart sounds were obscured. The apex-t was 2 in. outside the nipple line, and the left border the heart was found in a corresponding position. His erial system, as judged from palpation of the radial ery, exhibited marked atheromatous and senile changes. was very unsteady on his legs and walked with a very le gait, and on examination of his reflexes it was found t his knee-jerks were very brisk and exaggerated.

As the mental disturbance has no bearing on the point ler consideration, a detailed account of his psychosis be omitted. It is considered only sufficient to state t although his memory was greatly impaired, he suffered n no delusions or hallucinations, and he was capable appreciating pain or distress and communicating his sations to those in attendance.

On Feb. 18th he developed a large carbuncle over the t trochanter, was put to bed, and received appropriate tment in the form of free drainage. The carbuncle ponded well to treatment, but three days later (Feb. 21st) oil appeared on the left hip. This, however, had healed March 7th, but the original area, although clean, had not sed. On March 12th another carbuncle appeared on the t buttock and several others appeared in a few days in region of the hips, buttocks, and sacrum. On the ning of March 30th the patient conversed as usual with medical officer and complained of no unusual symptoms, at 12.5 A.M. on the following day it was reported that seemed to have had a "seizure" and had collapsed. en seen by the medical officer he was found to be in remis, and despite treatment he died at 12 20 A.M.

The Wassermann reaction of the blood and cerebrospinal fluid was negative.

Post-mortem Findings.

At autopsy marked atheroma was apparent in all areas of the body with consequent cerebral softening; enlargement of the cerebral ventricles and increased submeningeal fluid.

The heart was enlarged, weighing 530 g., and showed marked myocardial hypertrophy with fatty degeneration; these latter pathological changes were most apparent in the left ventricle. The cardiac valves appeared normal, apart from slight atheromatous changes, and gave no evidence of vegetations or acute inflammation. The pericardial sac was filled, but not distended, with a soft blood-clot and a small tumour in the region of the great vessels. The tumour formed a small protuberance ½ in. in diameter and projected about ¼ in. from the surrounding heart wall. It was found on examination to be softer in consistency than the normal muscle, and one small channel was discovered through which a probe could be passed into the right coronary artery ½ in. from its origin in the sinus of Valsalva. On making a cross-section of the growth a loculus was encountered containing about 1 c.cm. of pus; unfortunately, no culture media was at hand and the nature of the causative organism remains in doubt.

All the other organs of the body were carefully examined and no evidence of pyogenic infection was discovered other than the cutaneous lesions already described, and pyorrhœa alveolaris. The viscera, apart from the lungs which were passively congested, showed degenerative changes subsequent to the impaired blood-supply brought about by the atheroma.

It is presumed that the condition was one of multilocular abscess (carbuncle) of the heart wall in which the pus had tracked, in one of the loculi, in two directions—to the coronary artery and to the pericardial surface of the heart. In this manner a channel had been formed through which the blood had flowed into the pericardial sac, producing a mechanical resistance to an already greatly weakened heart and so caused death.

I wish to express my thanks to Colonel S. C. Elgee, medical superintendent of Cane Hill Mental Hospital, for permission to publish this case.

Public Health Services.

THE HEALTH OF LONDON IN 1927.

Dr. F. N. Kay Menzies, in his report on the County of London for the year 1927, explains that in recent reports the general public health services have been extensively dealt with, and that in the present instance he has devoted more attention to the school medical service, which, "joining hands with social agencies, is more intimately in touch with the domestic lives of the people, and in this way exercises a material influence on the general public health."

General Health Services.

Statistics.

The Registrar-General's estimate of the population was 4,550,000, including 9000 non-civilians. The 73,263 births gave a birth-rate of 16·1 per thousand. In 1901, when the population was about the same, the births were 57,829 more. The death-rate was 12·1, as compared with 11·6 in the previous year, and the increase was almost entirely due to the influenza epidemic at the beginning of the year, which caused an increased mortality at the higher ages. Fatal street accidents caused 669 deaths as compared with 656 in the previous year, but the deaths of children under 15 were 14 less. The weather favoured infant life, and a decreased mortality from diarrhœa produced an infant mortality-rate of 59, the lowest ever recorded in London. The death-rate from phthisis was 0·91; from all forms of tuberculosis, 1·05; from cancer, 1·49; from pneumonia, 1·0; from bronchitis, 0·83; from pneumonia, bronchitis, and influenza combined, 2·23; and from diarrhœa and enteritis under two years, 7·6 per thousand births, to be compared with 12·0 in 1926.

The table for the metropolitan boroughs, excluding the City, shows that the lowest infant mortality-rates were recorded in Holborn (38), in Woolwich (42), and in

Lewisham (46); while the highest were in Paddington (79), Chelsea (76), and Shoreditch (74). From phthisis, the lowest rates were in Hampstead (0·44), in Kensington (0·65), and in Paddington (0·67); the highest were in Finsbury (1.36), in Bermondsey (1·22), and in Holborn (1·21). The lowest rates from pneumonia were recorded in Woolwich (0·67), Wandsworth (0·67), Hampstead (0·70), Greenwich (0·73), and Battersea (0·73); while the lowest rates from bronchitis were in Chelsea (0·50), Hampstead (0·59), Stoke Newington 0·59), and Hackney (0·60). The lowest rates from cancer were in Holborn (1·18), Shoreditch (1·27), and Bethnal Green (1·29); while the highest were in Chelsea (2·21), Hampstead (1·86), and Kensington (1·84). The puerperal fever incidence per thousand births was 3·57 for London and varied much among the boroughs, being lowest in Deptford (0·53), Kensington (1·13), and Stoke Newington (1·37); and highest in Chelsea (8·2), Fulham (6·98), and St. Pancras (6·68).

Dr. Menzies points out that the mortality from puerperal fever is much lower in boroughs with poorer-class populations, than in those populated largely by the well-to-do. Thus in the years 1921–25 the rate in the aggregate population of Bermondsey, Bethnal Green, Finsbury, Stepney, and Shoreditch was 0·88 per 1000 births, as compared with 1·80 in the aggregate population of Hampstead, Kensington, Lewisham, Stoke Newington, and Wandsworth. In 1927 the mortality from puerperal fever in London was 3·22 per thousand births among single women, as compared with 1·15 among married women, while the rates from other accidents of childbirth were 2·93 and 1·46 respectively. The suggestion is made that the statistics of maternal mortality from childbirth should be given for legitimate and illegitimate births separately.

Small-pox.

There were 5 cases of small-pox in the county. One case was of the mild type and imported from the north of England. The other 4 cases were apparently connected with an outbreak in Hendon which took place in March to May from some unrecognised source. This outbreak included 13 cases, of which 7 were fatal, including 2 of the 4 London cases. The first case of this outbreak was a man of 47, vaccinated only in infancy and his illness was considered to be chicken-pox. As the result of this failure in diagnosis, clothes were sent to the laundry and further cases occurred among the laundry workers, 4 of which proved fatal.

Anthrax.

During the first week of January 4 cases of anthrax occurred in connexion with the Zoological Gardens. All of the patients had been engaged in handling the carcasses of two elephants which had died from an illness the nature of which was not recognised until after the men were infected. Anti-anthrax serum was promptly administered and all the patients had fairly mild attacks. A prophylactic dose of serum was also given to 29 persons who had been in contact with the carcasses and no further cases occurred.

Encephalitis Lethargica.

There were 149 notifications of encephalitis lethargica, of which 114 were considered to be true cases. Of these, 49 had proved fatal up to March 31st, 1928.

A table indicates the present condition as regards 528 cases of encephalitis which came under observation from 1925 to 1927. Of these, 132 under the age of 16 and 111 over the age of 16 are stated to have recovered. Since November, 1925, the M.A.B. have provided 100 beds for children between the ages of 3 and 16 suffering from the after-effects of encephalitis. At Winchmore Hill Hospital Dr. G. A. Borthwick, the medical superintendent, has recently reported that this experimental unit has not been productive of curative results, but has proved valuable for observation purposes. It has also housed children whose mental condition unsuited them for outside life. In most cases he considers that the nerve-cells have been irretrievably damaged, but in a minority it may possible by patient endeavour to educate other ce to function in the place of those destroyed. While cannot recommend the Board to continue the secti as an experimental unit with curative hopes, the ne for housing these difficult and pitiful cases may sufficient justification for carrying it on.

Cancer.

An analysis is given of the deaths from cancer London during the period 1911 to 1920. The deat are divided into three groups. In group 1, comprisi growths of the upper alimentary tract, the death-r per million among males was 336 as compared with among females. In group 2, comprising growths the reproductive system, the female death-rate w 509 and the male rate 52. In group 3, wh includes all other cancers, the sex-incidence w approximately equal. The excessive female mortal in group 2 is shown to occur at an earlier age than t excessive male mortality in group 1. Some of t conclusions drawn from this analysis are: (1) th among persons over 35 the movements of the can mortality from 1850 onwards are correlated with t year of birth and not with progressive changes conditions of life; (2) that if this same correlat holds in the future, the female mortality-rate w continue to decline while the male rate will incre further for some time; and (3) that a cancer diathe may be the dominating factor and that the solution the cancer problem may ultimately be found to depe upon the detection and modification of such diathe

Tuberculosis.

During 1927 2305 samples of milk from 32 count were taken at London railway termini. The bacte logical examination was completed for 1969, of wh 154, or 7·8 per cent., yielded tubercle bacilli, as agai 4·5 per cent. in 1926. Information was sent to county medical officers of health and as a result cows were slaughtered under the Tuberculosis Orc In the case of 311 of the samples, the inocula guinea-pigs died from an acute infection, and notic this was also sent to the medical officers of health the chance of its being due to unsatisfactory conditi in the cowsheds. The conditions of patients w received residential treatment under the coun tuberculosis scheme are investigated after the la of five years. Adult cases treated in 1921, number 3178, were investigated. Of 468 pulmonary ca without tubercle bacilli, 83·5 per cent. were alive; 330 early cases with tubercle bacilli, 61·5 per cent. w alive; of 1299 moderately advanced, 34 per c were alive; of 858 advanced cases, 3·7 per cent. w alive; and of 223 "surgical" cases, 73·5 per c were alive. The particulars as to children under were as follows: Of 271 pulmonary cases with tubercle bacilli, 90 per cent. were alive; of early c with tubercle bacilli, 44·5 per cent. were alive; o moderately advanced, 50 per cent.; and of 33 advan 3 per cent. were alive. Of the 189 children treated non-pulmonary tuberculosis, 153 were alive, of wh 71 were at school and 58 at work.

In 1926 arrangements were made to try artifi light treatment in connexion with the dispensa The number of cases treated has been small but results have not been encouraging, and it is sugges that the best results will only be obtained in reside institutions. The scheme, however, is to be contin for another year. With the help of the Invalid Chil Aid Association, 146 children living in contact w advanced consumptives were boarded out in country. The arrangements for residential treatm for children have been improved and there is now waiting-list either for pulmonary or surgical cases.

Venereal Diseases.

The new cases of syphilis were 357 and the cases of gonorrhœa 813 in excess of the figures 1926. Although a number of patients still fai complete the full course of treatment, the ratio attendances has gone up to 40 per new case.

nber of non-venereal cases who present themselves examination at the clinics has shown a steady rease. Thus in 1917 the non-venereal cases numbered ut one-sixth of the venereal. In 1922 they nbered about one-third, and in 1927 they numbered re than one-half. The practitioners qualified for supplies of salvarsan, &c., now number 446, compared with 108 at the end of 1917.

School Medical Service.

The school report indicates a steady progress of the provement programmes dealing with the reduced of classes, improved desks, and sanitary conditions. ere is even a revolt against desks altogether. ant departments are already equipped with table l chairs instead of desks.

Rheumatic Children.

Dr. J. Nairn Dobbie has continued his investigations h regard to rheumatic children. His material was cases admitted under the council's scheme to shalton or Highwood hospitals. Of these children, were below the average in nutrition; while 19 wed no evidence of heart affection, 42 were uspicious," and 39 definitely affected. The tonsils e seldom markedly enlarged; adenoids were not a eworthy feature, and the children did not belong the "catarrhal," but rather to the nervous type. ir educational attainments were below the average. 44 cases the parents stated that the children had n "nervous" all their lives, and Dr. Dobbie ours the view that this nervousness is inherited. In there was history of rheumatic incidence on the nmediate" family, and in only 23 was there no umatic family history. The homes of 35 were ms and of 53 more semi-slums. Dr. Dobbie's pression was that the actual dampness in most of houses was of small degree. In the case of such nes the washing of clothes is done at the public hs. To sum up the environment: "It would pear that no one disadvantageous factor stands out, rather that each and all of the concomitants of verty, poor houses, dampness, unhealthy sites, ercrowding, lack of ventilation and of sunlight, poor ding, poor clothing, irregular habits, &c., destruc-ely converge on these unfortunate children, who t along the lines their bias carries them, be it rasmus, rheumatism, tuberculosis, or the respiratory eases generally."

Nursery Schools.

A special report deals with nursery schools in ndon, Manchester, and Bradford. At the outset it is nted out that the medical objections to a large ool—e.g., the McMillan with an average attendance 220—have been overcome. These schools are needed st for the *most* neglected children from the worst nes. There should always be some bathing accom-dation and an open air régime. The social function the school is twofold; it trains the children and by ucating the mothers, raises the home life to a her level. "The potential under dog, rebel, or archist can be recognised among the entrants to nursery school, but it is seldom they are not nsformed into orderly, active, and happy citizens of ir community." Educationally, no attempt is de to teach the three R's, and the most profitable rsuits are rhythmic movements, speech training, and nd work. Special training is needed for the staff d there is at present a dearth of such training ntres. To be drawn to the work is not enough. The nursery school teacher must not only be a lover children, but a knower of children as well, and a ower of all the factors that make for health, owth, and happiness." The nursery school must velop its own methods and create its own traditions, d must not be absorbed into elementary education til it is strong enough to reform the infant school m the bottom. The education of the younger pupils s hitherto suffered too much from academic and okish traditions proceeding from the top.

Dr. Menzies takes exception to the statement of the ief medical officer of the Board of Education that London is an area without an orthopædic scheme. He shows that the council has not neglected its duty to the crippled children of London despite the disadvantage that it is not the local authority under the Maternity and Child Welfare Act. He also gives reasons to show that the percentage of children who leave the physically defective schools of a district wearing apparatus is not a satisfactory index of the efficiency of the district's orthopædic scheme.

Mr. Sowden Hills, inspecting dental surgeon, has completed a comparison of English and Jewish children as regards dental condition. About 7000 children were examined. He finds that up to the twelfth year there is no marked divergence, but that after this age the English boys show an increase in the amount of dental decay while the Jewish boys show a decrease.

MENTAL HOSPITAL REPORTS.

The *City of Leicester Mental Hospital* at West Humberstone had 941 patients on its books on March 31st, 1928. The ratio of mentally afflicted in Leicester is now 1:304; ten years ago it was 1:338. The recovery-rate for 1927 was 45·66 per cent. and the death-rate 6·31 per cent., figures which compare very favourably with the average for all public mental hospitals. Autopsies were held on 90 per cent. of those who died. Leave of absence was granted on 2870 occasions, and 52 per cent. of men and 37 per cent. of women patients have full or limited parole. Only 13 temporary and 3 permanent escapes resulted from this liberty. Small parties go out regularly for motor drives and to the cinema, and 78 per cent. of the patients are usefully employed. A cinematograph was installed in the recreation hall in the autumn. The old house of the medical superintendent has been converted into a female block; 32 new beds will be provided at the very low cost of £64 per bed. A new nurses' home is to be built. Two more members of the staff have obtained their M.P.A. certificate. A "Trinity" ultra-violet ray outfit has been installed in the X ray department. The pathologist reports on the malarial treatment of 12 more cases of general paralysis. Only one non-paralytic patient showed any improvement after induced malaria, but of 48 paralytics 25 per cent. have been discharged recovered and another 14·5 per cent. are "much improved." Reduction of the globulin and cell content of the cerebro-spinal fluid has been noticed, and in several cases the colloidal gold curve has changed to the luetic type. The investigation into the incidence of syphilis shows that of 218 males 7·5 per cent. and of 286 females 4·9 per cent. gave positive Wassermann reactions. The dental surgeon reports 347 operations, 99 inspections, and 27 refusals of treatment. All new admissions are inspected by him. The oral condition in general shows steady improvement.

The *City of Worcester Mental Hospital* at Powick housed 1056 patients at the end of last year. The discharge-rate was 43·52 per cent. and the death-rate 7·12 per cent. Post-mortem examinations were made in 65·75 per cent. of instances. The general health was good save for influenza and one case of erysipelas. Three babies were born in the hospital; two of the mothers have since been discharged. The new verandah for male patients fills a long-felt need, but the hospital still lacks clinical rooms, an admission block, and a convalescent villa. A continuous bath has been installed in one of the female wards. Thirty-three patients went out on trial, and 38 had parole within the estate. Six nurses obtained their M.P.A. certificate.

The *City of London Mental Hospital* at Stone, Dartford, had an active year in 1927. Of the 161 patients admitted 72 came on a voluntary basis. The recovery-rate was 30 per cent. for the certified and 40 per cent. for the voluntary patients. The death-rate was 5·86 per cent. There were 398 private and 246 rate-aided patients on the books at the end

of the year. There was not a single case of infectious disease, and the general health was good. Parties of rate-aided patients were sent to the seaside. Tiresome patients are now segregated in Newstone House, and the female infirmary ward has been divided so that recent admissions can be treated apart from other inmates. The new single rooms are furnished like ordinary bedrooms, and every possible parole is allowed. Two new wireless sets and two more ultra-violet ray lamps have been installed. The farm continues to supply all the milk, mutton, pork, eggs, poultry, and vegetables required for the hospital. A small dairy has been built and equipped. A difficulty in obtaining female nurses has now been satisfactorily overcome, and one more attendant has obtained his M.P.A. certificate. Fourteen men and 11 women nurses are now registered or certificated. The consulting staff now comprises a physician, a surgeon, a gynæcologist, an ophthalmologist, and an aurist. The Minister of Health visited the hospital in the autumn.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 28TH, 1928.

Notifications.—The following cases of infectious diseases were notified during the week:—Small-pox, 149 (last week, 173); scarlet fever, 1641; diphtheria, 926; enteric fever, 83; pneumonia, 654; puerperal fever, 54; puerperal pyrexia, 84; cerebro-spinal fever, 8; acute poliomyelitis, 8; acute polio-encephalitis, 2; encephalitis lethargica, 28; continued fever, 1; dysentery, 5; ophthalmia neonatorum, 118. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified in the following 17 counties: London, 3; Derby, 17; Devon, 3 (Plymouth); Durham, 38; Huntingdon, 1; Lancaster, 1; Leicester, 2; Norfolk, 2; Northampton, 2; Northumberland, 7; Nottingham, 5; Stafford, 11; Yorks, East Riding 6, North Riding 2, West Riding 23; Glamorgan 10; Monmouth, 15; and 1 at the Port of Southampton.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on July 31st–August 1st was as follows:—Small-pox, 19 under treatment, 1 under observation; scarlet fever, 1743; diphtheria, 1791; enteric fever, 39; measles, 323; whooping-cough, 194; puerperal fever, 18 (plus 11 babies); encephalitis lethargica, 71; poliomyelitis, 2; "other diseases," 20. At St. Margaret's Hospital there were 20 babies (plus 15 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox or enteric fever, 19 (5) from measles, 2 (1) from scarlet fever, 32 (5) from whooping-cough, 22 (3) from diphtheria, 53 (11) from diarrhœa and enteritis under two years, and 25 (7) from influenza. The figures in parentheses are those for London itself.

Of the 14 fatal cases of measles outside London, 9 were reported from Liverpool and 3 from Birmingham. Of the 27 fatal cases of whooping-cough outside London, 8 were reported from Liverpool, 5 from Birmingham, and 4 from Newcastle-on-Tyne. The deaths from diarrhœa were about 50 per cent. more than in the previous week.

The number of stillbirths registered during the week was 276 in the great towns (corresponding to a rate of 39 per 1000 births) including 39 in London.

Paratyphoid in the London Area.—The figures given above record a large increase over the previous week in the notifications of "enteric fever" and in the number of admissions under this head to M.A.B. hospitals. Since the return was made up upwards of 100 cases of paratyphoid B. infection have been notified in the London area, the cases for the most part being of a mild type, although one fatal result has been reported. The wide distribution suggests the infection of some common article of food, cream being under suspicion rather than the milk or water supply. The most intense centres of infection have been in Epsom and Kensington, although Wandsworth, Fulham, and Westminster have borne their share. The outbreak has been somewhat confused in the popular mind with a group of cases of food poisoning of a very different type among police officers in the Westminster area with a fatal case of toxæmia, in which death was presumed to have resulted from eating infected ham; the pathological report from King's College Pathological Laboratory confirmed this finding, but the inquest has not yet been concluded.

Reviews and Notices of Books

THE PRESCRIBING OF SPECTACLES.

Third edition. By ARCHIBALD STANLEY PERCIV M.A., M.B., B.C. Cantab. Illustrated with d grams. Bristol: John Wright and Sons, L 1928. Pp. 239. 15*s*.

THIS book, which is written by an acknowled authority on mathematical optics and on the minutia spectacle prescribing, has been rewritten and enlarg It contains much interesting matter besides the us accounts of the optics of refraction and of the meth of testing the refraction of the eye. For retinosco the concave mirror is recommended on the grou that illumination is better than with the pl mirror; the author admits, however, that prefere for one or the other form is to a great extent a mat of habit. The refraction of the macula can only accurately determined in most cases with a dila pupil, and this is specially important in myo where the disc is liable to be tilted and the fun stretched. For the accurate estimation of the ar of astigmatism the use of cylinders in retinoscop far preferable to the refraction of the two meridia spherical lenses alone. Here the author menti a point which is not generally known. W the correct cylinder in the trial frame is at wrong angle the error, shown by the direction which the shadow moves, is greatly exaggerat This enables the surgeon to judge how to shift axis of the cylinder until an equal shadow in meridia is obtained. The ophthalmometer is recommended for accurate work, since it only gi the astigmatism of the anterior corneal surfa Dr. Percival points out that tilting the lens do wards increases the spherical and still more cylindrical power. This device may be of pract value in some cases of high myopia with astigmatis also in prescribing temporary glasses after a catar operation, the immediate effect of which is to ca some astigmatism with the axis horizontal. On subject of periscopic spectacles Dr. Percival n that the anterior convexity of a high plus len often too high. For instance, if a lens of +10D i be made periscopically on a base of −7D, the ante convexity should not be +17D but +16 D, owin the distance from the eye. These and other det are worked out mathematically and the exact figu are given in tables. More than a third of the boo devoted to the application of mathematical optic various practical problems in the prescribing fitting of glasses.

FRACTURE OF THE PELVIS.

Beiträge zur Kenntnis der Beckenbrüche Beckenluxationen. By ANDERS WESTERB Upsala and Stockholm. 1928. Pp. 375.

THIS monograph is Supplement VIII. of LXIII. of the Acta Chirurgica Scandinavica comes from the surgical clinic of the University Upsala under the authority of Prof. Gunnar Nystr The author wrote it in Swedish, and it has b translated into German by Dr. H. Flex. Dr. Wes born, in his preface, states that since the introduc of X rays no thorough study of the subject appeared and that a clinical rontgenological inv gation of the material is required not only as reg the industrial efficiency of the surviving patie but also as to their anatomical recovery and subjec symptoms. The author gives statistics of the ca of fracture in 278 cases as far as ascertainable; of these were falls from a height (including e cases of suicide by jumping out of window), 84 caused by crushes, and the exact mechanism of in was unknown in 34 cases, although mechanic propelled vehicles were concerned in most of th Under the heading of "Fracture of the Pelvis" included injuries ranging from slight to severe, s so severe that recovery is only just possible. Th

re any statistics as to prognosis are valueless unless ey are classified. The gravity of a case depends gely upon the presence or absence of injury to portant structures inside the pelvic cavity. Chief ong these are rupture of the bladder and urethra 0 per cent. of cases). Injury to the kidneys, hough included in these statistics, hardly seems tributable to pelvic fracture. Of 15 cases of rupture the bladder eight recovered. Early operation and rineal drainage in this injury as well as in ruptured ethra is of the greatest importance as a preventive sepsis, which is the most frequent cause of death, art from concomitant injuries. Diagnosis of adder rupture by the injection of sterile air and bsequent X ray photograph is strongly recom-ended. A tied-in catheter does not prevent the currence of sepsis and seems to increase the liability stricture in cases of ruptured urethra.

The general mortality amounted to 12 per cent. all the cases here recorded. Double vertical cture of the pelvic ring was the most fatal (30 r cent.), while fracture of the expanded portion of e ilium was least deadly, having a mortality of ly 3 per cent. 114 pages of the work are taken by small print records of case-histories, illustrated th outlines of X ray pictures. There is a copious bliography and 16 plates of excellent reduced productions of X ray photographs. There is, fortunately, no index.

This is a very painstaking and conscientious dy of the subject.

PHILIS.

Second edition. By HENRY H. HAZEN, A.M., M.D., Professor of Dermatology and Syphilology, Georgetown University and Howard University. London: Henry Kimpton. 1928. Pp. 643. 42*s*.

THE progress in syphilology since the first edition this work appeared in 1919 has necessitated a rough revision, which has been achieved with actically no alteration in size. The earlier chapters ntain useful statistics of syphilis in various sections the American population, as well as a valuable cussion on infection and immunity. Excellent ounts are given of the early stages of the disease. e cutaneous manifestations, which are classified ording to the system of the American Dermatogical Association, are particularly well described l illustrated; a valuable feature is the note the histological changes in each type of lesion. e late lesions are dealt with systematically. The pters on the vascular system and the genito-nary tract are of a high standard and excellent oured plates of the cystoscopic appearance of ical lesions are included. Not many surgeons will port the author's opinion that syphilitic bone ease is a very frequent cause of spontaneous ctures, nor that the clavicle is the favourite bone syphilitic involvement; this last statement is, reover, at variance with the statistics given in the lier part of this chapter. Radiographic evidence a syphilitic lesion has frequently been noted in rcot's joints; Dr. Hazen believes that most nifestations of this condition, especially those of hypertrophic type, are due to the direct action of spirochæte rather than of neuropathic origin. He otes considerable space to involvement of the tral nervous system, drawing special attention the high proportion of cases of early syphilis in ch this system is affected, and to the necessity of mination of the cerebro-spinal fluid. The various es of neurosyphilis in all stages are lucidly described full details are given of the technique and value of Lange gold chloride test. Tryparsamide does not et with his unequivocal approval, but Dr. Hazen is y favourably impressed by the results of intra-nal treatment after the technique of Swift and Ellis, ch is fully discussed. The treatment of general alysis by malarial therapy is dismissed in a very sory manner.

Readers who appreciate the full details of treatment the various stages of the disease given in most modern works of British origin will be disappointed with the chapter on treatment. The sections on the antenatal treatment of infected women, and the treatment of congenital syphilis in infants are certainly not full enough. As to the general principles of treatment, there are evidently differences in practice between England and America. The therapeutic value of bismuth appears to us to be underrated in this book, the author's experience of a high percentage of albuminuria following the administration of this remedy being unusual. Of the organic arsenical compounds, arsphenamine is recommended as giving good results in routine practice; toxic effects with both neo-arsphenamine and sulfarsphenamine appear to be more frequent than with similar preparations of European origin. The simultaneous administration of arsenical compounds and metallic remedies is not recommended.

Throughout the book Dr. Hazen quotes freely from authoritative sources, and gives extensive lists of references at the end of each chapter; he would have done well also to make clear his own opinion, based on personal experience, especially where controversial questions are involved. Students and practitioners will miss this guidance, but will appreciate the impartiality which characterises what is on the whole an excellent work.

DEAFNESS AND ITS ALLEVIATION.

By VINCENT NESFIELD, F.R.C.S., Major I.M.S. (ret.); Ophthalmic Surgeon, Queen's Hospital for Children. London: H. K. Lewis and Co., Ltd. 1928. Pp. 85. 7*s*. 6*d*.

UNDER this title Mr. Nesfield sets out to describe an operation he has designed for the relief of deafness. This consists in gouging away the bone to make a channel 14 mm. in diameter parallel to, and behind, the external auditory canal. The aim in view is to produce an aperture into the middle ear about 5 mm. in diameter. According to the author's description, this "boring" leads into the attic of the middle ear; the mastoid antrum is usually "non-existent, or only present as a thin red line of mucous membrane." The bridge between the "boring" and the external auditory canal is cut away to a depth of about 10 mm., and the external meatus split to make a flap, which is stitched to the under surface of the skin incision. Two tubes, 5 mm. in diameter, are inserted from the meatus backwards into the canal made in the mastoid; these are removed on the next day, and firm plugging inserted and renewed daily for three weeks with the object of keeping the opening patent. Nevertheless, the skin opening nearly always closes over at the back of the external auditory meatus; in time a very thin membrane forms in this situation. Mr. Nesfield claims that the operation improves the hearing in six different ways: (1) by rendering the Eustachian tube patent; (2) by allowing air to enter the middle ear directly through the new opening, "and this appears to be the most potent factor"; (3) sound waves impinge on the membrane which forms over the new opening; (4) the channel not only aerates the middle ear but drains it of mucus; (5) the boring and the increased vascularity resulting in the healing process produce a reflex effect on the cochlea; and (6) the increase of the total space of the middle ear increases the resonance. As to (1) he does not attempt to explain how or why this effect is attained. The benefit claimed in (2) cannot occur when the opening closes over as, on his own showing, it nearly always does; this criticism applies also to (4), while (5) is a highly speculative statement.

The book appeals rather to the general public than to the medical profession; thus, of its 85 pages, but 14 are devoted to a description of the operation, its after-treatment, and its results, while the previous 56 pages contain a popular account of the anatomy and physiology of the ear, and of "the nature of deafness." The author says that, as it is not possible to gauge the result under three years, it is difficult to show exact results. It may be difficult, but it is

surely not impossible, to show the approximate results on all patients operated on three years and more ago. Such tables of the results of treatment have been compiled by other authors of novel methods, and the profession has a right to expect some attempt to show the result in all cases treated by one who makes large claims to alleviate such a disease as chronic deafness.

ACCIDENTS, AND PROBLEMS ARISING THEREFROM.

Lehrbuch der Unfallheilkunde. By Dr. PAUL JOTTKOWITZ, Oberregierangsmedizinabrat, Chief of the Orthopædic Installation, Berlin. Munich: J. F. Lehmann. 1928. Pp. 280 M.15.

THAT this book must cover a great deal of ground is evident when we reflect on the immense variety of injuries that result from accidents. No work quite like it has appeared in this country, where information has to be collected laboriously from text-books on medicine, surgery, orthopædics, and jurisprudence. In Germany, the pioneer country of workmen's insurance, quite a literature has grown up of which this volume is representative. The treatment of injuries is not considered in detail, but their disabling effects are discussed fully, and also the difficult subject of the estimation of wage-earning capacity after crippling injuries or loss of parts. In this last connexion, amputation sites and artificial limbs come under review. The extent of the field will be indicated by the quotation of some of the headings, which range from accident insurance, infected wounds, animal infections such as glanders, tuberculosis, diabetes, acromegaly, and arthritis, artificial limbs. This work is in some sort an epito of medicine and surgery from an industrial insura point of view, the diseases of the special senses be excluded. It is of considerable medico-legal va and certainly should be studied by medical offic concerned with the relations between patients a employers.

DISEASES OF THE BLOOD AND BLOOD-BUILDI ORGANS.

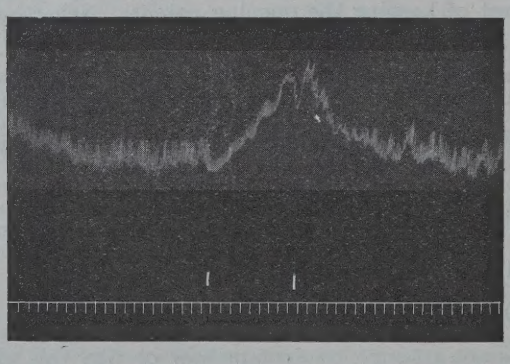
Clinical Pediatrics. Vol. XI. By WILL PALMER LUCAS, M.D., Professor of Pediatrics a ALFRED H. WASHBURN, M.D., Instructor Pediatrics, University of California Medical Sch Supervising Editor, ROYAL STORRS HAYN M.D., Clinical Professor of Diseases of Childr College of Physicians amd Surgeons, New Yo London and New York: D. Appleton and C Ltd, 1928. Pp. 233. 16*s*.

DISEASES of the blood and blood-forming syst form a small but important division of the ills children. In this substantial volume there is padding, and an admirable feature is the inclus of illustrative cases. These are all well chosen a are worthy of close study by those concerned with diseases of children and adults alike. The pe liarities of the blood picture in children, both health and disease, are well described; the secti on the diagnosis and treatment of the various c ditions are satisfactory, but the pathological s might well have been further elaborated.

New Inventions.

APPARATUS FOR RECORDING HUMAN BLOOD PRESSURE.

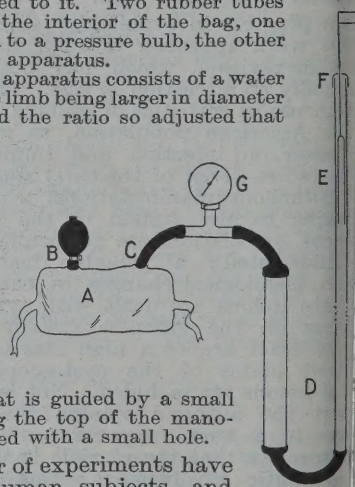
HITHERTO it has been impossible to obtain continuous records of human blood pressure with simple apparatus. Erlanger [1] obtained short continuous records at intervals, but the only apparatus devised for taking continuous records is a complicated apparatus employing an electric valve invented by Kolls in 1920.[2] Moreover, this apparatus did not record rapid variations in blood pressure. Consequently, much important work in relation to variations in blood pressure in human subjects under different conditions either has had to be omitted or has been performed by difficult and unreliable means. The simple apparatus about to be described is a step towards remedying this lack. As will be seen, it is a combination of some well-known apparatus slightly modified, and the instrument is obviously an object for improvement. It consists of two sections.



Continuous human blood-pressure record, showing the effect of respiratory cessation in the inspiratory position. Time intervals 5 secs.

1. An armlet made of a collapsible rubber bag (A), outer surface of one side being made rigid by mean stiff canvas attached to it. Two rubber tubes communicate with the interior of the bag, one (B) being connected to a pressure bulb, the other (C) to the recording apparatus.

2. The recording apparatus consists of a water manometer (D), one limb being larger in diameter than the other, and the ratio so adjusted that one millimetre of mercury difference in actual blood pressure moves the liquid in the recording limb of the manometer an equal distance. To record on smoked paper, a special glass float (E), carrying a light celluloid pointer, is used. The stem of the float is guided by a small glass cap (F) fitting the top of the manometer and perforated with a small hole.



A large number of experiments have been done on human subjects, and the best procedure has been found to be as follows. The armlet is arranged im diately above the elbow, and the subject or lies with the arm supported in a comfort position. The pressure in the bag is raised 20–25 mm. Hg below the subject's systolic pres The requisite tension in the bag to produce pressure can be ascertained by inserting a s meter (G) in a by-tube. In this way, 10-mi continuous records can be obtained without subject experiencing any discomfort. It shoul pointed out that the apparatus does not record sys blood pressure but variations in blood pressure. employing a simple factor the actual blood pres can easily be ascertained if desired. The ten in the bag is, of course, considerably above venous blood pressure and, consequently, vo effects are excluded. A typical tracing obtained this apparatus is shown.

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[1] Erlanger, J.: Jour. Labor. and Clin. Med., 1926, xii., No. 2, 172.
[2] Kolls, A. C.: Jour. Pharmacol. and Exper. Therap., 1920, xv., 433.

THE LANCET.

LONDON: SATURDAY, AUGUST 11, 1928.

HE INTERNATIONAL UNIT OF X RAYS.

AT the First International Congress of Radiology, d in London three years ago, there was a discussion the necessity of establishing an international unit be used as the basis of all X ray measurement of age. It was felt at the time that satisfactory gress in treatment with X rays would not be sible without a unit which could be universally pted. It was therefore resolved that an Inter- ional X Ray Unit Committee be formed, and the tish X Ray Unit Committee, which was established 1923, was requested to communicate with the ysical and radiological societies of the principal ntries throughout the world with a view to the nination of representatives to constitute such an ernational committee. During the last three years British X Ray Unit Committee has had the matter nand and a committee consisting of two representa- es from each of 19 different countries has been med. Each country was invited to submit the nes of two representatives—one a medical man l one a physicist—to serve on this committee. preserve a balance, the British Empire was repre- ted by two members only.

The representatives were invited to submit their ws on the X ray unit and the measurement of age, and it was at once evident from the replies eived that the subject was one in which great erest was taken. A summary of the various points sed was prepared and submitted as a basis for cussion at a meeting of the International X Ray it Committee which met during the Second Inter- ional Congress of Radiology held last week at ckholm. Representatives from the following ntries were present at the meeting: Belgium, cho-Slovakia, Denmark, Great Britain, France, rmany, Italy, Japan, Norway, the United States America, Russia, Spain, Sweden, and Switzerland. is gratifying to know that unanimous agreement s arrived at in the committee meeting concerning main points under discussion. The following ommendations put forward by the International mmittee were unanimously adopted at a general eting of the Congress:—

1. That an international unit of X radiation be pted.

2. That this international unit be the quantity of radiation which, when the secondary electrons are ly utilised and the wall effect of the chamber is ided, produces in 1 c.cm. of atmospheric air a 0° C. and 76 cm. Hg pressure such a degree of ductivity that one electrostatic unit of charge easured at saturation current.

3. That the international unit of X radiation be led the "Rontgen," and that it be designated by letter R.

4. That various standard methods be employed to ablish the unit.

5. That for all comparative purposes it is advisable employ ionisation chambers which have been ibrated in terms of a standard chamber for radiation of the various qualities employed. It is o advisable to make the wall effect of these chambers small as possible.

6. That the practical instrument used to measure X ray output be called a dosage meter.

7. That the constancy of the indications of the dosage meter be tested by means of gamma radiation emitted from a definite quantity of radium element, the measurement being carried out always under the same conditions.

8. That any specification of dosage is incomplete without specifying the quality as well as the quantity of the radiation. The quality of X radiation used for practical purposes is very varied and it would be impracticable to give a complete specification of it; but much information can be obtained from a knowledge of the degree of absorption of the radiation in standard materials, the peak voltage applied to the tube together with the filter employed, and the general character of the high tension apparatus. For practical purposes the quality may be expressed by stating the half value layer in a suitable material or by stating the effective wave-length as determined by the percentage amount of radiation transmitted through a given thickness of a suitable material (copper or aluminium).

In view of the fact that rapid progress is being made in methods of X ray measurement and in our knowledge of X ray phenomena, the Committee felt that the above recommendations should be regarded as provisional. They may be modified later in the light of further information. The adoption of the resolutions marks an important step in the measurement of X ray dosage. Not only will the confusion which has hitherto existed in radiology by the employment of the letter R to denote entirely different quantities be removed, but it will now be possible for a radiologist in one country to reproduce accurately an X ray dose and thus be enabled to compare his results with those of radiologists in other countries. Hitherto this has been impossible since there has been no international agreement concerning the unit in terms of which the dose should be measured. Emphasis has been laid on the need for specifying the quality as well as the quantity of radiation employed in treatment. The recommendations indicate how the quality may be specified, and it would be well in order to obtain as close agreement as possible if radiologists were to employ the methods suggested. The correlation of the physical dose and the biological dose needs careful consideration by the International Committee as it presents many difficulties. Whether these difficulties can be surmounted and a correlation be found is still an open question.

The International X Ray Unit Committee has been authorised to continue its deliberations and to submit a further report for consideration at the next Congress to be held in Paris in 1931. Prof. K. M. G. SIEGBAHN (Upsala) was elected chairman, and Prof. E. A. OWEN (Bangor) and Prof. HERMANN HOLTHUSEN (Hamburg) honorary joint secretaries of the International Committee during the ensuing three years. The British X Ray Unit Committee, which has had the financial support of the Medical Research Council, is to be heartily congratulated on the excellent work it has done during the last three years in preparing the way for the adoption of the resolutions by the Second International Congress of Radiology.

DISSOCIATED JAUNDICE.

SINCE the observations of certain French biochemists called attention to the fact that the elimination of bile-salts and of bile-pigments do not necessarily run a parallel course in certain cases of icterus, the study of so-called dissociated jaundice has been actively pursued by many observers. A recent article by CHABROL,

BÉNARD, and BARIÉTY[1] gives an account of the researches carried out by them during the last nine years on the excretion of bile-salts. The detection of bile-salts is fairly easy, but the quantitative estimation of these bodies either in urine, blood serum, or even in bile itself is a matter of great difficulty. Thus in blood serum these authors have found it impossible to obtain an estimate of the amount of bile-salts present by any method depending on diminution of surface tension. They have, however, been able to apply a modification of Pettenkofer's reaction which will give a positive result in dilutions as great as 1 in 10,000. In the case of urine, Pettenkofer's reaction has also been employed, but here surface-tension estimations have proved of value when carried out by a special technique. It has been found that the NaCl-content of the fluid is of importance, since the concentration of this salt may produce considerable modifications in the results obtained. When duodenal secretions, recovered by means of a duodenal tube, are examined, the estimation of the bile-salts is a simple matter as these bodies are always present in considerable concentration. The French observers have found that methods of estimating surface tension are the most readily applicable in this medium and give results of great utility, even if no claim to fine exactitude can be made. The principal conclusions drawn from their observations are as follows :—

(1) In normal circumstances, bile-salts can never be found except in the first part of the small intestine, the duodenal fluid giving figures in the neighbourhood of 15 g. per litre. The authors have given the name of biliary index to the ratio salts/pigments, and find that this index is normally in the region of 40. In the blood serum they are able to assert that if bile-salts are ever present in physiological conditions their concentration is certainly below 0·1 g. per litre, and as regards the urine they are again unable to find any evidence of the presence of these bodies normally.

(2) In the case of hæmolytic jaundice, the findings are comparable to those in the normal—i.e., bile-salts cannot be found in the blood serum and they do not lower the surface tension of urine. Duodenal tubage, on the other hand, gives a ready demonstration of the dissociation which is held to be present in jaundice due to excessive hæmolysis, the biliary index in such cases being as low as 6 instead of the normal 40.

(3) In obstructive jaundice bile-salts should theoretically be found with the greatest facility. Some 10–15 g. of bile-salts are normally excreted daily in the bile, and in cases of grave obstruction to the biliary passage it would be expected that a large part of this would appear in the urine, but such does not appear to be the case. In a series of 15 cases of grave obstructive jaundice, the authors have been surprised to find in the blood serum only the smallest trace of the bile-salts in spite of the presence of a high concentration of bile-pigments in the blood. In reality, the proportion of bile-salts was ten times less than that of pigments, whereas in normal bile these proportions are reversed. The first possible explanation of this fact is that the renal threshold for bile-salts is much lower than that for bilirubin. The study of the urine in such cases does not support this thesis, for whenever the concentration of bile-salts in the urine is measured, it is found that the amount eliminated in obstructive jaundice is relatively small, and there have often been cases of obstructive jaundice in which the pigmentation was of the deepest degree, and yet the urine showed an almost complete absence of bile-salts.

The conclusion is drawn that any icterus which goes on for a long time tends to be accompanied with a disassociation of the amount of bile constituents excreted, the pigments being the elements showing extreme retention. According to the theory of LEMIERRE and BRULÉ, such a condition, in wh Hayes's reaction is negative, in spite of an inte choluria, indicates dysfunction of the hepatic cells, following CHABROL, BÉNARD, and BARIÉTY, the t explanation would appear to be that there is a gen deficiency of bile-salts in the organism in these ca and they base this belief on the fact that the small qu tities of bile which can be recovered by duodenal tub in such circumstances demonstrate a considera diminution in the relative content of bile-salts. explain such a disappearance of bile-salts from bile itself they have recourse to the fact that ch sterol is noticeably increased in the blood in all th circumstances, and they hold that it is possible t this increase of blood cholesterol is in part due t failure of the liver to form bile-salts. Apart from t the fact that the normal circulation of bile-salts fr the liver to the intestine and then back by the po vein to the liver has been interrupted by the prese of an obstruction, is thought to be sufficient to br about a steady diminution in the bodily reserve bile-salts.

In conclusion, these authors have attempted discover whether there are not frequently variation the excretion of bile-salts amongst patients suffe from diseases unaccompanied by jaundice. Here, ag caution must be observed because the surface ten of urine can be materially affected by many bo in addition to bile-salts—chlorides, albumin, polypeptides being outstanding examples. In m cases of secondary carcinoma of the liver, and du the course of certain acute infections, observation the surface tension, together with a modified Pet kofer's reaction, point to the possibility of an exces excretion of bile-salts. These findings must, howe be accepted with reserve. Still more interesting certain observations on the effect of injecting an ex of bile-salts into the blood, it being found that intravenous injection a concentration much hi than that ever observed during biliary obstruc can be produced without any accompanying pru or bradycardia.

[1] Presse Méd., July 7th, p. 849.

ACTIONS AGAINST GOVERNMENT DEPARTMENTS.

GOVERNMENT departments are far from enjoyi good press at the moment. Judges abuse the well-reported phrases; Prof. J. H. MORGAN has attacking them in two articles in a popular eve newspaper; the Lord Chief Justice is understoo be devoting the Long Vacation to preparing publication a book in criticism of bureaucr Though it is not unknown at public dinners for civil service to hear itself praised for its compet integrity, and self-effacement, there are plent cases (especially during war time) where Governm departments have deserved the condemnation have received. In one sense bureaucracy is increa and must increase. The manifold activities of Home Office and the Ministry of Health—in directions as the inspection of factories, the not tion of diseases, and the general supervision of h services—are in a measure an infringement of pers liberty. But it is too late to say that Governm departments are not to interfere in these mat On the other hand, the departmental attitude easily exceed what is reasonable, especially in absence of legal check. The medical profession not be specially concerned, but it remember difficulties when panel doctors found the Minist Health exercising not only executive but also ju

nctions and seeking to bar the avenue of appeal to e law courts. As a member of the public, too, the actitioner may be surprised at the results of the ctrine that the King can do no wrong. A doctor's otor-car may be smashed by a negligently driven my lorry and the only remedy may be a futile im against the corporal at the steering-wheel. , if a postman steals a registered and insured postal cket, it may turn out that the compensation is rely discretionary not contractual. It is not important, therefore, to inquire the nature of the gal liability of State departments and to consider ssible reforms.

Mr. J. W. GORDON, K.C., has recently published a mphlet on "The Crown and the Courts" (Stevens,), setting out the case for reform illustrated by stances and judicial comments. His examples of e sins of Government departments are set out under veral heads such as "usurpation of authority," respass to property," "imposition of unauthorised xation," and "delay or denial of justice"—damning list which suggests that the time has me for a fresh Magna Charta. The difficulty is at esent that the Crown is immune from liability for e wrongful acts of its servants. Petition of Right ll not lie for what the lawyers call a tort. There is me doubt whether this rule is historically well unded, but it is solidly established to-day and thing but a new statute could upset it. In at least e of our self-governing Dominions the rule does not ist. Under an Act of 1903 the Commonwealth of stralia can be made responsible for the actions of officers just as a master can be made liable for e actions of his servants. Australia has abolished e complicated and anachronistic procedure by way Petition of Right and has put the subject when ing the Crown in no worse position than if he were ng another subject. Something of the kind is quired in England. The obsolete procedure and the e-sided prerogative ought to be modernised and odified. After the war a strong committee was pointed by Lord BIRKENHEAD, when Lord ancellor, to consider the position of the Crown as gant and to prepare a Bill to amend the law as nd desirable. After long delay, as Mr. GORDON rs, a Bill was produced more than a year ago t nothing more has been heard of it. It may be ged that the matter is complicated and not free m controversy. The departments naturally fear a ltitude of petty claims—for example, if the miralty carries out big gun firing near the coast d windows are broken. Nevertheless, it is understood that most of the Government departments are pared to accept the Bill. Little will be done unless blic opinion applies pressure. Mr. GORDON'S mphlet is therefore timely, and those who wish to rsue the matter beyond the mere collecting of thologies of judicial abuse of Government departments should study the draft Bill which was published Cmd. 2842 in April, 1927.

AN International Conference on Light will be d at Lausanne and Leysin from Sept. 10th to 13th next. ose taking part will include Prof. H. C. Dorno (Davos), f. C. Fabry (Paris), Prof. V. Henri and Prof. Bloch rich), Dr. Leonard Hill (London), Prof. Hausmann enna), Dr. Alfred Hess (New York), Prof. Axel Reyn penhagen), and Dr. A. Rollier (Leysin). Among the jects to be discussed are the methods of measuring the rgy and biological activity of light rays, irradiated foods l sterols, the climatic and light therapy of various forms uberculosis. Dr. G. Murray Levick is acting as general norary secretary of the Conference in England, but all rance fees and general inquiries should be addesssed to Secrétariat-général de la Première Conferénce Internationale de la Lumière, Lausanne, Switzerland.

Annotations.

"Ne quid nimis."

THE DIAGNOSIS OF TUBERCLE IN GENERAL PRACTICE.

THE diagnosis of consumption presented no difficulty to the practitioner of 50 years ago. If cough, blood-spitting, wasting, night-sweats, and hectic flush proclaimed the disease the patient's friends were advised that he was in a state of consumptive decline, and the verdict was received as a sentence of death. The customary precautions were taken to postpone, as far as might be, the inevitable end. The dangers of fresh air were met by closed windows whose crevices were further sealed by crimson covered bolsters filled with sand. The bed was screened by heavy curtains, scarcely withdrawn to permit access to the sufferer. The patient's resistance was supported by drugs liberally prescribed, and blood-letting was resorted to in extremity. When the end came, both doctor and relatives had the satisfaction of knowing that everything possible had been done, and bowed themselves before the mysterious dispensations of Providence.

We know to-day that the symptoms and signs on which the doctors of a previous generation relied for diagnosis represent the last stages of disease and indicate as certainly as in the days of the younger Dumas the near approach of death. The importance of diagnosis at a much earlier stage as offering the only hope of cure has been emphasised by every teacher since the day when Koch made his great discovery. Indeed an almost morbid care has been exercised in the attempt to discover the earliest possible signs of tuberculosis. Great importance has been attached to almost imperceptible variations in breath sounds, and the skill of a piano-tuner demanded to determine relative changes in the percussion note of the lung apices. In recent years thousands of persons have been stigmatised as tuberculous and admitted to sanatoriums, where they have received treatment for non-existent disease, and been saved from a peril that never threatened. A more rational appreciation of the nature of tuberculosis, and in particular of the distinction between infection and disease, has led to a more reasonable attitude on the part of those specially interested in the care of the tuberculous. But the general practitioner, mindful of the teachings of his student days, and aware of some change in the modern attitude, remains in doubt as to the course he should pursue when confronted by a doubtful case. Any lack of acuity on his part may deprive his patient of the only chance of cure, while overscrupulous care may awake groundless fears and pave the way to chronic invalidity. A false step on his part may not only involve a period of needless inactivity for his patient, it may be responsible for either of those twin obsessions, the dread of the phthisophobic or the craving of the phthisophilic. The latter condition is perhaps more common than the former.

Dr. Lawrason Brown, of Saranac Lake, has endeavoured[1] to clear the air by setting up a diagnostic standard representing the minimal requirements for diagnosis. If he has erred it is on the side of boldness, but he has undoubtedly turned the hose of common sense on the sacrificial fires of the phthisical expert, and the practitioner whose hand may have lost some of its cunning and whose ears are slightly dulled by the passage of time will be grateful to him. His diagnostic criteria are: (1) hæmoptysis of a drachm or more; (2) pleurisy with effusion; (3) moderately coarse râles above the third rib and the third vertebral spine; (4) a parenchymatous Rontgen ray lesion in the same area; and (5) tubercle bacilli in the

[1] Jour. Amer. Med. Assoc., 1928, xc., 1032.

sputum. He claims that careful attention to these points will enable a correct diagnosis to be made in about 98 per cent. of all doubtful cases. Taking Dr. Brown's criteria seriatim—

(1) It will be noted that for significant hæmoptysis Dr. Brown postulates an amount of blood of not less than a teaspoonful. He thus excludes those cases of "coloured" or "streaky" spit which, except in cases of chronic fibroid phthisis, are usually due to causes other than tubercle. We might add that a hæmoptysis which the patient delights to describe is seldom tuberculous in origin, while one which he strives to minimise or attribute to epistaxis is almost invariably of sinister import.

(2) Pleurisy with effusion should obviously be treated as tuberculous unless some other cause is manifest, while dry pleurisy should at least be regarded as a danger signal.

(3) The significance of râles is usually appreciated, but the old and incorrect teaching that tubercle usually commences in the lung apex may lead to error. The signs of the graver types of phthisis, especially in the young, are usually found below the clavicle. The true apex of the lung is more often the site of abortive disease. A careful examination of the axillary regions may reveal crepitations when the upper half of the lung, both anteriorly and posteriorly, is apparently free. The necessity of auscultation over the lateral walls of the chest is too frequently forgotten.

(5) The importance of repeated examinations of the sputum for tubercle bacilli cannot be exaggerated. The failure to apply this simple test is responsible for more errors in diagnosis than all other causes put together. If five examinations at weekly intervals yield a negative result, the practitioner may regard the future of his patient with some degree of equanimity. There are exceptions to every rule, and all the circumstances of the case must be taken into account, but the records of any dispensary will show that, provided a conscientious search for tubercle bacilli has failed to discover the bacillus in the first instance, only in rare cases will a positive finding be forthcoming at a later date. Especially where young adults are concerned, experience does not support the statement frequently made that the "T.B. minus" case, failing sanatorium treatment, will later develop into a "T.B. plus" case.

(4) X rays are invaluable in the differential diagnosis of chest diseases, but a poor skiagram is worse than useless. Unless, therefore, a first-class apparatus and a skilled interpreter are available, the general practitioner will be compelled to rely on the symptoms, physical signs, and bacteriological tests. A history of exposure to infection obviously indicates the need for special care, but whenever possible a radiographic examination of the chest should be made, for, as Dr. Brown rightly insists, it is only in the absence of each of the five criteria that pulmonary tuberculosis can be excluded with confidence.

THE STYPTIC EFFECT OF TRANSFUSED BLOOD.

IT is generally agreed that blood transfusion is the most effective means of combating bleeding which occurs as a manifestation of the "hæmorrhagic diathesis." That this transfusion should have a beneficial effect by replacing lost blood is obvious, but it is far from clear why it should also stop the hæmorrhage, either for a time or permanently. The assumption has been that its hæmostatic effect is due to the introduction of thrombocytes or platelets into the circulation of the bleeder, but in considering this it has to be remembered that although most patients with manifestations of the hæmorrhagic diathesis show a thrombopenia, they do not all do so. Many a case has been reported in which bleeding ceased without any increase in the number of the platelets, and there are even records of hæmorrhage persisting despite the presence of platelets in fair numbers in the circulating blood. Evidence against the supposed hæmostatic activity of the transfused platelets brought forward by Dr. Heinrich Engel,[1] of Prag as a result of observations made in the course treating four thrombopenic patients by blood tra fusion. He found each time that within a hours of transfusion the platelet count of the recipi had fallen to its original low level. In one observations were made during and for 24 hours a the transfusion. In the course of the transfusion blood was found to contain 28,110 platelets per c.m within one hour they had fallen to 10,460; wit six hours to 375, and 24 hours later to 80. E concludes that the beneficial results of blood tra fusion in the hæmorrhagic diathesis are due prima to the replacement of blood, which gives the pat a chance to tide over the thrombocytopenic peri he further believes that the transfused blood exerc a styptic effect which, although not due to the in platelets it contains, may be partly traceable to t disintegration products. A part of the styptic eff he suggests, may be in the nature of a protein sh reaction, due to the parenteral administration foreign protein, and in view of the well-known that the coagulability of the blood is increased a the induction of anaphylactic or anaphylactoid st this suggestion appears reasonable. It is suppor by the common observation that those transfusi followed by pyrexia and even a definite rigor particularly effective in stopping hæmorrhage. Si such reactions occur most frequently after transfu by the citrate method, this may perhaps be regar as recommending the method when arrest of hæm rhage is desired.

GALL-BLADDER DISEASE IN THE YOUNG

Dr. A. H. Potter[2] maintains that contrary to generally accepted opinion, infections of the g bladder occur most commonly in adults under mi age, and that they may be met with quite ofte adolescents and young children. In support of contention he states that statistics of about 25 cases of gall-bladder disease collected from reports of well-known clinics and hospitals show the average age of patients at the time of opera is 36 years for females and 39 years for males, interval between the onset of symptoms and time of operation varying from 3 hours to 39 y As regards the incidence of gall-bladder diseas very young persons Dr. Potter has collected tabulated 226 cases in children not above 15 y of age, beginning with Gibson's case, reported in 1 and ending with August, 1927. Negroes appea be far less frequently affected than members of white race. It is noteworthy that while in n instances the symptoms in children were as ty as in adults, children are rather inclined to com of abdominal pain when gall-bladder diseas present. Dr. Potter contends that the acute i tious diseases of childhood have not received attention they deserve as factors in the evolutic gall-bladder affections. Whereas in the past typ fever was generally the preceding factor in bladder disease, of late years there has been a g decline in the incidence of typhoid, and if this tinues the disease will be practically eliminated. the other hand, there has been a great increas influenza which Dr. Potter thinks is taking the of typhoid as a factor in gall-bladder disease. A infections of the gall-bladder and cystic duct usually accompanied by hydrops, which may transitory or permanent. As the inflammation sides the cystic duct recovers its function, drai of the gall-bladder takes place, and hydrops appears. Four cases in Dr. Potter's own pra occurred in a boy, aged 11, who had had influ the previous year; a boy, aged 6, who had had sc fever 18 months before; a girl, aged 15, who had influenza in the previous year; and a girl, age without any history of illness. This incidenc

[1] Med. Klin., 1928, xxvi., 888.
[2] Surg., Gynec., and Obstet., June, 1928, p. 795.

ectious disease seems hardly greater than might be pected in a random sample of the child population. l the cases made a good recovery without operation.

ETHYLENE IN THE OPERATING THEATRE.

ETHYLENE for general anæsthesia has not in this untry received the welcome with which it apparently ntinues to be greeted in America, and in the most ent contributions to the subject[1] we find nothing to ke our views more favourable towards its use. e writers, having claimed ethylene as "one of our st general anæsthetics"—which for short operations may grant them as a correct description—proceed discuss the explosibility of the gas. In saying at this should not be ignored, they find that ethylene liffers very little from ether in this respect," but er demonstrate how great the difference actually by detailing the precautions that should be observed avoid explosion during the use of ethylene. Although se precautions are described as "not burdensome," y appear to outweigh any of the advantages monstrated for the use of ethylene. The system for oiding danger "available at little expense and uble" involves insulated copper wire running along gas tubes, metallic paint for covering the rubber gs (which must each contain about a pint of water), d a moist cloth attached to the metal frame at e back of the apparatus. "Any potential set up the gas escaping under high tension through the lucing valves or by friction in the rubber tubes is once grounded before the mixing of the ethylene d oxygen." The outside of the rubber tube is ated with the metallic paint. Within the tube is bare spiral copper wire soldered to metal at each d. "It has also seemed advisable to solder a conxion to the metallic spiral in the wall of the rubber be." Before each operation water is run through e tube. The anæsthetist's feet rest on a moist th, or he sits on a stool attached to a moist th. A special system of grounding must be worked t based on the fact that cement and tile are good nductors, but wood, linoleum, and rubber-covered ors are poor conductors. After studying the ecautions required for the safe administration of ylene according to these authors, we are left in ubt whether the anæsthetist should be best qualified a fireman, an architect, or an electrical engineer.

[1] Amer. Jour. Surg., June, 1928.

UBLIC HEALTH CONGRESS AND EXHIBITION.

A CONGRESS will be held at the Royal Agricultural ll, London, during the week Nov. 19th to 24th, der the auspices of the various British municipal sociations interested in public health administration. e congress will be formally opened on the Monday th an address by the Minister of Health, and on the ernoon of the same day Sir George Newman will eak on the purpose of the public health services. Tuesday morning Sir Walter Fletcher will deal th research in relation to public health, and in the ernoon Dr. C. H. Bond with local organisation for e prevention and treatment of mental disorders. using and milk-supply will occupy the attention the congress on Wednesday, the introducers being . E. D. Simon and Mr. Wilfred Buckley. Thursday ll be given up to water-supply and sewage, the incipal speakers being Prof. W. J. Wilson, of Belfast, . J. H. Coste, chief chemist to the London County uncil, and Mr. John Gardner, of the West Riding vers Board. On Friday morning the new medical icer of health for the city of London, Dr. W. M. illoughby, will speak on food protection, to be llowed in the afternoon by Mr. R. H. P. Orde on e construction and equipment of hospitals. The al day of the congress will be given up to the bject of town cleansing. Official delegates to the mber of many hundreds have been appointed, and eir expenses will be paid by their local sanitary authorities. In the congress hall an exhibition will be held throughout the week, conducted on lines similar to that of the Public Works, Roads and Transport exhibit organised for many years past by Messrs. May and Pattisson, of 13, Victoria-street, London, S.W. 1.

FOOT-AND-MOUTH DISEASE.

FOOT-AND-MOUTH disease is of special interest to the pathologist, as its virus readily passes the pores of a fine porcelain filter, and the susceptibility of the guinea-pig to its action makes the disease a favourable subject for experimental research. The report [1] which has just appeared deals almost exclusively with the disease in small laboratory animals. Improved accommodation for large farm animals has, however, now been completed, and the experimental results obtained with guinea-pigs can be further tested on cattle, sheep, and pigs. The work on which the report is based (set out in three appendices) has been carried out at the Laboratory of the Ministry of Agriculture by Dr. F. C. Minett, at the Lister Institute by Dr. H. B. Maitland, Dr. T. Hare, Mrs. Y. M. Burbury, and Mrs. M. C. Maitland, and at the National Institute for Medical Research by Mr. J. A. Galloway and Dr. S. Nicolau. Mention is also made of research undertaken at the Lister Institute by Prof. A. Ciuca, of Bucharest. A fourth appendix contains a bibliography of work published since the last report appeared. An introduction contains brief reference to important recent work in other countries.

Lebailly and Vallée have noted the early appearance and rapid decline of infectivity in this disease in cattle, and the report contains evidence that active virus cannot as a rule be detected in the lesions of guinea-pigs beyond the third or fourth day after inoculation, though it was found by Dr. Hare in the apparently healthy skin of the ears as late as the tenth day. The results are similar to those obtained by Reppin who could not recover virus from the mouth in cattle later than the eleventh day after infection. Such observations contrast with the prolonged infectivity of the skin and mouth lesions and of the bone-marrow in the dead body, which have been shown to retain active virus for several weeks or even months if the animal has been killed during the infective period and the carcass kept at a low temperature. The viability of the virus on inanimate objects has been further investigated, and survival in vesicle fluid dried on glass and kept in a desiccator at 18° C. for at least two years is recorded. When dried on bran and kept under more natural conditions in the open air of the laboratory the virus has been found active after 40 weeks. Existing evidence therefore points to fomites rather than carriers as the reservoir of infection. Dr. Minett has tested the disinfectant action of a large number of substances, and finds that both acids and alkalis when highly diluted are very destructive to the pure virus; in the presence of organic matter they are much less effective. A 1 : 1000 solution of formalin sprayed on hay was capable of disinfecting it without making it unpalatable as fodder. Mrs. Burbury found that a temperature between 50° and 60° C. rendered inactive the virus contained in liquids, and that an orderly relation existed between temperature, time, and the concentration of the virus similar to that found in the case of bacterial emulsions. The duration and degree of immunity of the guinea-pig and the factors responsible have been examined, and a fairly close relation between the content of antibodies in the blood and the degree of resistance of the animal has been found to exist. It was recorded in an earlier report that a certain degree of active immunity resulted from inoculation with a vaccine consisting of virus killed with formalin. The effect of such a vaccine on the resistance of guinea-pigs has been studied, and confirmation of the previous results has been obtained.

[1] Ministry of Agriculture and Fisheries. Third Progress Report of the Foot-and-Mouth Disease Research Committee. Pp. 141. H.M. Stationery Office. 1928. 5*s*.

It has not, however, been possible yet to test the method on cattle in this country. Vallée, however, has reported encouraging prophylactic results in bovines with a formalised vaccine. The differences existing between the three types of virus found in Germany by Waldmann and Trautwein have been confirmed, but, with one exception, the type found in Great Britain has always belonged to the same type as Vallée's O strain. Three methods have been successfully used for determining the type of a virus :—

1. Inoculation of animals recovered from an attack due to virus of a known type.
2. Inoculation of animals protected by a formalised vaccine made with a known type.
3. Inoculation of animals passively immunised with serum of a known type.

Prof. Ciuca, using materials from guinea-pigs, has found complement fixation an effective method of demonstrating the presence of antibodies in the serum of recovered animals and of determining the type of virus present. Further experiments with rats and rabbits have confirmed previous observations showing the slight susceptibility of these animals, and have given no support to the suggestion that the disease is spread by rodents. Mr. Galloway and Dr. Nicolau give an illustrated account of the minute structure of the secondary vesicles on the tongue of guinea-pigs following inoculation of the virus into the sole of the foot. The work was needed because former studies had almost entirely been concerned with lesions at the site of inoculation or with vesicles in a comparatively late stage of the natural disease. The earliest pathological changes detected were small groups of three or four epithelial cells situated at varying depths between the stratum granulosum and the basal layer. The cytoplasm of these cells showed an altered staining reaction, and the nuclear chromatin was condensed into one or more deeply staining masses. At the same time, or very soon after, two or three polymorph leucocytes appeared close to the altered epithelium, but no cellular reaction in the corium could be detected at this early stage. The histological evidence thus brought forward favours the view held by Galloway and Nicolau that the multiplication of the virus is primarily in the epithelial cells. Mrs. Maitland has found that after inoculation of the sole of one hind foot the usual secondary vesicles could be prevented from appearing on the other foot by protecting the latter from pressure with a splint or a cotton-wool pad. On the other hand, if parts of the feet and toes not usually affected were subjected to increased pressure, vesicles appeared on these unwonted sites. Not only was the formation of vesicles controlled in this way, but experimental examination of the skin of the feet showed that the virus had not multiplied in the usual way at the sites of predilection on the soles when vesicles did not occur. The fact that the coöperation of the virus and pressure was needed to produce both the ordinary lesions of the generalised disease and free propagation of the virus in the usual sites is an interesting example of mutual action and reaction of an infective agent and the tissues.

The report shows steady progress in our knowledge of the infective agent, the pathology, and the nature and control of immunity in this important disease.

PROTECTION OF MOTHERHOOD IN SWITZERLAND.

EIGHTEEN years ago Dr. Bernheim Karrer stated in writing that there was nothing which could fairly be described as systematic protection of motherhood and infancy in Switzerland. A good deal of progress has been made in the meantime, and in a recent issue of the monthly bulletin of the International Office of Public Health Dr. Karrer, who is now director of the cantonal day nursery at Zürich, gives a critical survey of the work undertaken for the preservation of maternal and infant life. He still finds his country behindhand in the matter of antenatal supervision, stating that German-speaking Switzerland possesses no such thing as an ante clinic except for one or two connected with mate hospitals. In French-speaking Switzerland ante clinics are distinct institutions, but there are few of them compared with the number of welfare consultations. Again, while laws are in which make careful provision for the nursing mo both in money grants and exemption from h work, the pregnant woman may ask to be exc from work in a factory for eight weeks before con ment only at her own expense, there being no fina help to enable her to do so. This poverty of ante care is the more unfortunate, since little impr ment has been effected in the toll of stillbirths deaths in the first four days of life during the 15 years. Whereas the general infantile mort stands at 56·5, comparing favourably with many European countries, the mortality of the first days is 19·2. In other respects, however, st have been made; pædiatrics is now an obliga subject in the medical course and examinations, the study includes hygiene and feeding of infa Midwives, who are still the chief counsellors of S mothers, have also had their training stiffened up lengthened, and health visitors and baby nurses a year's course followed by examination. Instruc of the public, and especially of mothers, is forwa by schools for mothers, infant consultations (al conducted by doctors), and travelling exhibit The institutions for the care of babies include mate hospitals, children's hospitals with wards for infa refuges for mother and child together, baby shel day nurseries, and residential nurseries. The nu at Zürich, of which Dr. Karrer has charge, is a h with 45 beds, attached to the obstetric clinic; primarily intended for premature infants, but admits sick newly-born infants referred from the cl Many children are put out to nurse and, th nominally under medical supervision, in some dist the supervision is by no means satisfactory. In Zü the work is carried out from a child protection o and is so well done that Dr. Karrer suffers less an on behalf of illegitimate infants who leave the nu than of those whose parents are poor and improvid A number of similar voluntary societies, as we the national organisation " Pro Juventute," do u work in backing up the State provisions.

ATMOSPHERIC POLLUTION.

THE thirteenth report of the Advisory Committe Atmospheric Pollution[1] covers observations mad the year ended March 31st, 1927. It is the las these reports to be issued from the Meteorolo Office (Air Ministry), for the work has been transfe to the Department of Scientific and Indus Research which will from now on coördinate records and prepare an annual report thereon. task will remain in the hands of Dr. J. S. Owens, can be addressed at 47, Victoria-street, Lon S.W. 1. In addition to this routine survey sp researches are to be directed towards the solutio the scientific problems of atmospheric pollution, these will come under the Director of Fuel Rese supervised by a committee of the Department which Dr. G. C. Simpson, F.R.S., is chairman, Mr. J. K. Best (Cadbury Bros.), Mr. J. H. Coste (Chemist, L.C.C.), Dr. G. M. B. Dobson, F. (Lecturer in Meteorology, Oxford University), R. Whytlaw-Gray (Professor of Chemistry, L University), and Sir Napier Shaw are mem The last named has also expressed his willingne serve as the first chairman of a standing conferen coöperating bodies which will continue the cons tive work of the Advisory Committee. The re as heretofore, contains a mass of information on deposit of impurity at 80 different stations in United Kingdom. Although the good stations tinue to show improvement the bad ones remai

[1] Department of Scientific and Industrial Research. Investigation of Atmospheric Pollution. Thirteenth Re H.M. Stationery Office. 1928. Pp. 54. 6s. 6d.

l as ever. The highest deposit of tar as well as of phates was at Burnley; the lowest in either category Southport (Hesketh Park). Newcastle-on-Tyne red highest for carbonaceous or sooty matter ich there may make up 40 per cent. or more of the al deposit, the lowest record being at Rothamsted. ne of the reduction in the deposit of sulphates ms to be due to the increasing use of gas as a fuel. London and Glasgow from 1914 to 1927 the sulphate posit has diminished out of proportion to the total. interesting curve shows the effect of suspended oky matter in the coal stoppage of 1926 at Stoke-on- nt; in London the event produced no appreciable ct. It is also clearly brought out in a curve that rly the whole of the ultra-violet rays of sunlight cut off by a comparatively small amount of smoke the air. An interesting account is given of a haze Norfolk which was found to consist of salt crystals. ile the continuance of these detailed observations der the ægis of the Research Department is assured, must be no small satisfaction to those who have en a share in this laborious survey for so many rs that there will now be fitting opportunity for anised research into the scientific problems olved. The time is ripe for drawing conclusions m an immense wealth of material.

SYNTHALIN IN DIABETES.

THE use of insulin in diabetes has certain disadvantes. Although the necessity for injection encourages ct dosage, so far as quantity is concerned, it does reproduce the conditions of physiological secretion, where large doses are given the immediate ult of its administration may be an excessive luction of the blood-sugar, followed later by hyperæmia when absorption of carbohydrate from the estine is well under weigh. From almost every int of view it would be preferable to use a drug ich could be given by mouth and absorbed slowly h other contents of the alimentary canal, and high pes were raised a couple of years ago when it was ggested that insulin might find a supplanter in the w German preparation called synthalin. This drug d not been invented ad hoc, but had been evolved ring a series of investigations on parathyroid any in which it was found that guanidine caused all in blood-sugar. This happened only at the cost poisoning the animal, but aminobutyleneguanidine ved less toxic, and synthalin—so far the most isfactory of this series of substitution products—s recommended as relatively innocuous.

Synthalin contains two molecules of guanidine, ned by ten CH_2 groups, and its action is shown to be olly different from that of insulin, as it lacks the ential power of promoting the oxidation of glucose. e first accounts of its effect on patients were neverthes distinctly favourable. Frank, Nothmann, and agner[1] reported that sugar disappeared from the ne in mild cases of diabetes and that the blood-gar was lowered, though not reduced to normal; severe cases the dose of insulin could be reduced. ey admitted that synthalin did not act quickly ough to benefit patients in coma, and they did not prove its use for children. The Medical Research uncil arranged for tests in this country, and preinary reports from many British hospitals were blished in THE LANCET about a year ago.[2] These luded investigations carried out at St. Bartholew's by Dr. George Graham and Dr. G. C. Linden, o have now published a more detailed account of eir work.[3] In 8 patients out of 12 they found that nthalin caused a very definite and apparently neficial change in the carbohydrate metabolism. one of the eight 50 mg. of the compound replaced -45 units of insulin without the blood-sugar exceedg the normal limit, but in the remaining four it orded no practical benefit. These results are not so good as those of the early workers, but they are better than some of the others reported. The mode of action, as Graham and Linden point out, is still obscure. Insulin is a natural secretion, and will always lower the blood-sugar if enough is given; synthalin is a foreign chemical and has no action on sugar in vitro. They consider that synthalin must influence the carbohydrate metabolism by modifying cellular activity, and that this action is possibly a minor part of the more general effect that shows itself in toxic symptoms. It may work by depressing the power of the liver (increased in diabetes) to deaminise amino-acids, or its action may be regarded as a slight degree of a poisoning which when severe causes nausea, vomiting, pain, and jaundice. It is, of course, possible that its effect on carbohydrate metabolism is distinct from its toxic action, and that its failures are due to some idiosyncrasy in the patient. If this is so, it offers a parallel to salvarsan, which does not itself kill spirochætes, but causes the body to generate a lethal substance, and which also fails in some patients, whilst on occasion it produces effects comparable with those of synthalin. The toxic properties of synthalin are, however, a very severe drawback to its employment, for few patients who have experienced them will ever run the risk again. They occurred in 5 out of the 12 cases treated in this test. As prophylaxis against them, Frank has recommended that the dose of synthalin be withheld every fourth day, and A. Adler uses with each dose grs. 3 of sodium dehydrocholate ("decholin") which increases biliary secretion and may perhaps accelerate the excretion of synthalin from the liver.[4] This preparation was not tested at St. Bartholomew's Hospital, but Graham and Linden suggest that it should always be used, and that the dose should be carefully limited by starting with small amounts and gradually increasing them.

The fate of the sugar which disappears is unknown. It is not found in the liver or muscles as glycogen, and the lactic acid which is formed quickly vanishes again. Synthalin may merely destroy the sugar in the blood as yeast does in the stomach, but the appearance in one patient of a severe ketosis three days after the suspension of treatment suggests that the disappearing sugar was at least exerting an anti-ketogenic influence. To sum up, Graham and Linden say that there is no good evidence that the patients are really the better for having synthalin. Patients who need insulin had better use the natural product if possible; the new synthetic rival has a place only when there is a reason against injection.

[1] Klin. Woch., 1926, v., ii., 2100.
[2] THE LANCET, 1927, ii., 517.
[3] Quart. Jour. Med., July, 1928, p. 509.

HARVEST BUGS.

WE have in this country so few animals which bite and prick and sting with serious results that we make a good deal of fuss about beasts which are hardly worse than interesting. And now that the season of sitting about in the open air is with us, many people who respond vigorously to its attentions will lament the existence of the harvest bug or mite. They should also read the account of the animal and its allies which is given by Mr. Cecil Warburton in *Parasitology* (July, 1928, p. 228). There are about a dozen species of mites which afflict man in much the same way in different parts of the world; in all cases it is the larva alone which is parasitic and, as the adults are hardly known, the systematics of the subject are considerably muddled. The only one of which the life-history may fairly be said to be known is the Japanese *Trombicula akamushi*, which is something more than an annoyance because it transmits the river fever or tsutsugamushi disease. The larva in this instance is found abundantly on field mice and readily attacks dogs, cats, guinea-pigs, and other animals besides man. After much labour Miyajima succeeded in rearing adults and found that they were neither parasitic nor predaceous but can be reared on such food as potatoes and melons and appear

[4] Klin. Woch., 1927, vi., i., 493.

in nature to live on various plants; moisture is essential. Our national harvest bug is also a larva; none of the few people who have tried has succeeded in rearing the adult form, so that we have no means of knowing where and how it lives. More extraordinary still, perhaps, is the fact that those who study wild mites have failed to find one which may reasonably be supposed to be the missing parent. Obviously there is room here for an interesting piece of work. Dry grassy places, chalk downs, and the like, seem to be the animal's favourite habitat; it evidently lives somewhere, possibly underground or in the nests of mice. Meanwhile the best treatment for those who are particularly susceptible seems to be a complete change of clothes and a bath.

SCARLET FEVER ANTITOXIN.

WHEN this antitoxin was first introduced the important question was whether we had, or had not, found a useful agent in the treatment of scarlet fever. That question has been answered in the affirmative. Though no efficient serum appears to be yet available for combating the septic complications such as adenitis, otitis, or mastoiditis, there is now general agreement in many countries that for the treatment of uncomplicated attacks of scarlet fever caused by the toxin of the scarlet fever streptococcus, and for the protection of susceptible individuals who have been exposed to infection, antitoxin is potent and specific. Its use is now widespread. The main interest has therefore shifted to the question of dosage and standardisation. Of the methods of standardisation which have been tried, three need human subjects—viz., the Schultz-Charlton test, passive immunisation, and the Dick method of "skin neutralisation"; in two methods animals are used—viz., the Wadsworth-Kirkbride skin neutralisation in goats and the Parish-Okell rabbit test. If a test involving the use of animals has an error no greater than those needing human subjects, the animal test will presumably gain acceptance. The various methods are being compared in many laboratories but no critical comparison appears yet to have been published. Dr. R. Cruickshank elsewhere in this issue concludes in favour of the skin neutralisation method in human beings and the rabbit test, though his own careful observations on the duration of passive immunity show that this also is a good method of titration, for the effect of a dose of 2·5 c.cm. can be clearly differentiated from that produced by twice the dose, the patients in the latter group remaining negative to the Dick test for a longer period. This method would provide those in isolation hospitals with a means of testing the serum they use, for 5 c.cm. of a good serum will, as he [1] and D. McClean [2] have shown, keep the majority of patients negative to the Dick test for seven to ten days and will protect contacts from infection with scarlet fever. Parish and Okell [3] state that an average concentrated serum will in a dose of 0·25 to 1 c.cm. protect rabbits against the acute illness produced by the injection of culture of scarlet fever streptococcus. This method they use for measuring the strength of sera. Both Cruickshank and R. E. Dyer [4] discuss the difficulties of the skin neutralisation test. Not all Dick-positive subjects are suitable for the test, because of serum sensitiveness, and the readings are not easy. In U.S.A. an official unit based on this method has been fixed and a minimum content of antitoxin prescribed. No English official unit has yet been adopted. Meanwhile, the general experience in England that the sera available are efficient in the treatment of scarlet fever and for the passive protection of contacts is evidence that the methods of titration of these sera in use in the various serum institutes are serving their purpose and ensuring supplies of satisfactory sera.

[1] Glasgow Med. Jour., January, 1928.
[2] THE LANCET, 1927, i., 483.
[3] Jour. Path. and Bact., 1927, xxx., 521.
[4] U.S. Public Health Reports, 1928, xliii., 1659.

BRITISH MEDICAL ASSOCIATION

ANNUAL MEETING AT CARDIFF.

(*Continued from p. 250.*)

SECTION OF SURGERY.

UNDER the presidency of Prof. A. W. SHEEN a later of Mr. A. J. WALTON, a discussion on the

DIAGNOSIS AND TREATMENT OF SPINAL CORD TUMOURS

was opened by Mr. DONALD ARMOUR, who limi himself to tumours arising from the cord, the spi nerve roots, and the meninges, and chondromata the intervertebral disc. Clinically they caused paraplegia by compression. More than three-four were extramedullary and the intradural were m frequent than the extradural by three to one. intradural tumours about two-thirds were do or dorsolateral in position. The course of the dise was usually slow and chronic and divided into th stages: (1) of root symptoms, usually unilateral; of Brown-Séquard paralysis; (3) of complete co pression, paraplegia, or bilateral paralysis. symptoms generally appeared in the following ord Peripheral pain, increase of reflex activity below point of compression, paralysis, loss of sensibili and loss of reflex activity with flaccid paraly The commonest early symptom was localised, rec ring and persistent pain, referred to the course the nerve involved and attributed to innumera conditions in the body and limbs. Pain in the b might be the only complaint for a long time, especia with lumbosacral and cauda equina growths. Press on the sensory tracts of the cord might cause pain remote parts of the body before any motor or sens changes could be discovered. Paræsthesiæ of vari kinds might occur, at the level of the tumour, fr root irritation; above the level, from pressure of held-up cerebro-spinal fluid, or from sympathe involvement; or below, from irritation of sens tracts. Objective sensory changes were usua absent in the early stages and later depended on amount of compression or destruction of the tra In extramedullary tumours there was some dis ciation of sensations below the level of the tumo while all types of sensation were equally involv in intramedullary growths, in which also maximum sensory disturbance was often at a below the segmental level. Tactile sensation less affected than pain and temperature. In tumo of the conus and cauda equina the sensory disturba was usually bilateral and asymmetrical. Subject motor disturbance usually followed subjective sens symptoms and was progressive. In high tumo the order of limb involvement was almost alwa homolateral upper limb, homolateral lower li contralateral lower limb, contralateral upper li The irritative stage, with tremor, muscular tens and spasms was generally over by the time the pati came for examination, or was masked by a degen tive paralysis of the corresponding muscles wit diminished tendon reflex. When the tumour be to exert further pressure on the cord direct indirect spinal symptoms appeared and were of gr diagnostic value. Very often a minimal stimu produced the "mass reflex." Bladder loss usu preceded rectal loss by some time. The patholog effects of the actual pressure on the cord were ex ordinarily limited, as was shown by the recov after removal of a large tumour. Paraplegia flexion followed paraplegia in extension which mi however, be a very short stage.

Localising Symptoms.

Nystagmus might appear in high cervical tumo and bulbar symptoms occurred occasionally. Inte pain up the back of the neck and head might ca a clinical picture suggestive of caries or spasm torticollis. Involvement of the phrenic roots m cause diaphragm paralysis.

In lower cervical tumours four root syndromes might appear—Erb-Duchenne type; a middle type with atrophy of the triceps; Aran-Duchenne type and Dejerine-Klumpke type.

Lower dorsal tumours might simulate abdominal disease and lumbar tumours might show multiple root signs with atrophic paralysis. Tumours of the cauda equina caused intense pain radiating over the perineum, perineum, and back of legs, and trophic lesions were common.

Atypical clinical forms were of four kinds. Those with purely medullary symptoms showed paraplegia without any signs of root involvement. Those with purely root symptoms were like ordinary neuralgias. When there were multiple tumours, two root syndromes were superimposed. The vertebral form was marked by intense and diffuse pain and was often diagnosed as Pott's disease.

There was no symptom which occurred exclusively with any one kind of tumour. The symptoms differed in sequence, duration, and time of onset according to the localisation of the growth. A short history was in favour of the more rapidly growing extradural variety. Bony changes were rarely seen in intradural tumours and were common in extradural. Other features of extradural tumours were sensitiveness to pressure over the spine and absence of root pain and xanthochromia; lumbar puncture might cause sudden and marked increase in symptoms. Great excess of protein in the lumbar fluid combined with completely normal cisternal fluid or a "reversed" Brown-Séquard syndrome was in favour of an extradural growth. As a rule, intramedullary tumours were characterised by less frequent root pains, less spastic paraplegia, and more common amyotrophic phenomena, a more marked alteration in painful and thermal sensibility and a typical and clearly shown dissociated anæsthesia. In favour of a diagnosis of intramedullary tumour was: a preliminary stage of root pain, slow but continuous development of paralysis in motor and sensory function, a growth more breadth rather than in length, fairly long persistence of a Brown-Séquard syndrome, marked spasticity persisting after the appearance of complete paraplegia with Babinski's sign; symptoms of motor root irritation and absence of signs of atrophic degenerative paralysis, and of trophic troubles, and the "loculation syndrome" in the cerebro-spinal fluid.

Combined cisternal and lumbar puncture was a diagnostic aid revealing below an area of compression, xanthochromia, increased protein and other substances, and occasionally spontaneous coagulation. The replacement of cerebro-spinal fluid by air caused nausea, pain, or collapse in cases of spinal block. Lipiodol injection was not very reliable, and there might be sensory lipiodol dissociation; its greatest field of usefulness was where the sensory level was not well defined.

There was only one treatment—operation—which commanded correct diagnosis and precise level localisation. Segments of the cord did not correspond with the vertebræ of the same name, and there were also individual differences. The operation of choice was laminectomy as developed by Victor Horsley, with the patient in the lateral position, under intratracheal ether. (Mr. Armour then described the technique in detail.) French authorities were more enthusiastic than others in the use of X rays and radium for operable growths, but even they were cautious and warned against exaggerating the curative value.

Dr. G. RIDDOCH said that diagnosis must ultimately rest on the existence of a progressive paraplegia with signs pointing to root involvement. Remote signs might be absent at a stage when diagnosis was quite possible, or focal signs might be absent throughout. Clinical features came first in diagnostic significance, followed by investigation of the cerebro-spinal fluid and vertebral signs and, in selected cases, by other methods for determining the patency of the subarachnoid space. The paraplegia developed in a certain definite way; the first stage was a spastic paraplegia in extension, with a weakness that was more flexor than extensor, and which appeared more in the lower limbs, with downward pointing of the foot and toes. The reflexes were all increased and Babinski's sign was present. Homolateral extension of the whole limb might be evoked by stimulating the leg below the knee, and the gait was spastic. In the second and graver stage, of paraplegia in flexion, the flexion reflex dominated the reflex picture and could be obtained by stimulation of any part of the limb, and the mass reflex might be evoked. In the third stage there was flaccid paralysis. The diagnosis of the level of the growth was made primarily on focal signs, which might be of root or of segmental origin. The former pointed definitely to the segment involved, but the latter did not. Motor signs were usually of less value. Diagnosis was most difficult when there were no focal signs and reliance had to be placed on the often equivocal sensory phenomena and the motor and reflex signs, which were not much help. It was necessary to ascertain the point where normal sensibility changed into abnormal, and not merely the highest limit of complete anæsthesia; moreover, the obliquity of the fibres had to be taken into consideration. The appreciation of tuning-fork vibration was often valuable and might be impaired when the posterior columns were involved. On the whole, intramedullary tumours were more often cervical or lumbosacral in location and extramedullary ones about the regions of the enlargements. With the former, remote and focal signs appeared more or less together, while with extramedullary growths the focal signs might appear long before there was any paraplegia.

Lipiodol Injections.

Sir PERCY SARGENT showed lantern slides of different varieties of tumour and X rays of lipiodol injections. Lipiodol, he said, sometimes caused severe root pain and might have serious after-results. When successful it was very useful, but the better the neurologist the less often would it be necessary and it should be used less rather than more. Intramedullary tumours usually extended over many segments, producing an elongated block, in contrast with the local block of extramedullary growths. By a cisternal injection and a lumbar injection with the patient inverted, it was possible to map out an area of block. The prognosis of patients with intramedullary tumours was not hopeless—he had seen three recoveries. The operative mortality-rate was very low; the worst areas were between the second and fifth dorsal, where serious cardiac, gastric, or intestinal disturbance might be caused. The excellent recovery depended on the facts that compression had been very slow, that the bladder function was usually involved very late and very slightly, and that bedsores were very rare; there were therefore no septic complications.

Mr. LAMBERT ROGERS recorded six cases of spinal tumour from the Welsh National School of Medicine, one in a girl of 16, who had made a remarkable recovery. The tumour had contained many psammoma bodies and also masses of true bone, a very rare finding which afforded evidence of the essential similarity of cranial and spinal meningiomas and supported the mesoblastic derivation of membranes.

Mr. G. JEFFERSON said that his experience of spinal cord tumours was that they were practically painless and patients complained of spastic paraplegia. The syndrome of cord compression followed in a definite sequence, first a disturbance of motor power in the legs and then sensory changes of a particular kind, notably dissociation. He then showed a number of charts demonstrating the results of investigating the cerebro-spinal fluid by the Queckenstedt method.

The Importance of Early Diagnosis.

Mr. WILFRED TROTTER spoke for the common man, and said that the diagnosis was often missed in the early stages, especially when the disease began as

unexplained pain, which was almost always diagnosed by some meaningless phrase, varying from year to year with the fashion—neuritis, sciatica, arthritis, fibrosis. That was the form in which spinal tumour came before the panel doctor. The commonest tumour was the neurofibroma, and this essentially began with root pain, without any physical signs. If it were then diagnosed, treatment would be early and almost invariably successful.

Mr. H. ADAMS quoted a case of psammoma of the sixth dorsal region, which began as a painless limp. He suggested that the neurofibroma type might be the cause of pain, while the psammoma and endothelial type of tumour was the cause of spastic paraplegia.

Mr. STANLEY FOSTER recorded several cases with no paraplegia, only pain; one had been diagnosed as neurasthenia, and another as Pott's disease and disseminated sclerosis successively.

Mr. R. BROCKMAN said that cases of unexplained pain were the most difficult to diagnose, and instanced one woman with unilateral pain radiating from the lumbar region round to the pelvis. She had had an inflammatory mass removed from her abdomen and a subsequent nephrectomy without relief, and died suddenly after a profuse hæmorrhage from a spinal tumour. Cases of "curious pain" should always suggest spinal cord tumour.

Mr. WALTON said that the slower the course the better the prognosis, as the ultimate results depended less on the presence of a tumour than on the damage it had done, which was proportional to the rapidity of its growth. All cases should be operated upon at once. He agreed with Mr. Armour's technique. What operative risks there were were the accidental risks of all operations.

TREATMENT OF GANGRENE.

Mr. SAMPSON HANDLEY (London), in opening the discussion, said he proposed to confine his remarks to more recent methods of vasomotor surgery in relation to gangrene, and gave a brief history of the subject. He described Leriche's method of performing periarterial sympathectomy and stated that this surgeon had had successes in various conditions, but he did not perform his operation for gangrene. According to Prof. Leriche, after sympathectomy there is a local contraction of the artery, and for some hours pulsation is feeble and the limb is colder than its fellow. This is followed by elevation of the temperature of the limb and of the arterial pressure, and by increased amplitude of the pulse for from three to four weeks.

The speaker then drew attention to his method of alcohol injection, which he believed was a definite advance on Leriche's operation, and claimed that in certain cases it will avert threatened gangrene, or arrest the spread of senile gangrene already present, and so obviate amputation. The technique used is to expose the femoral artery in Hunter's canal for 1 to 2 in. With the finest possible hypodermic needle 2 to 3 minims of alcohol are injected at four points spaced round the artery, the needle being inserted obliquely and nearly parallel to the vessel. When the injection is complete a whitish band about ½ in. wide should be seen round the artery, but no constriction takes place. The effect of alcohol injection is that the foot in successful cases becomes warmer almost at once and the vasodilatation may last for a year or more, whereas it is stated to pass off in a few weeks after Leriche's operation. Mr. Handley mentioned some criticisms of the method and stressed the difficulty of making a proper selection of cases at present. In regard to indications, he would advise it strongly in cases of threatened or incipient gangrene of a lower limb, but would prefer to employ it in the prodromal stage. He considered it useless in Buerger's disease and of doubtful value in Raynaud's disease. Finally, he claimed that alcohol injection was a distinct advance on Leriche's operation, and appealed to medical men when first consulted for symptoms of arterial dystrophy to allow vasomotor surgery a fair field in its attempts to avert the onset of gangr and the loss of a limb.

Mr. PHILIP TURNER (London) said he would con himself to the clinical aspects of periarterial sym thectomy, which he had performed eight tir twice by operation and six times by alcohol inject Of these, three were very striking successes wh he narrated, three were temporarily improved, two, whose general condition was very bad, d Mr. Turner pointed out that following sympathect the following clinical effects were seen whate their cause—namely, increased warmth of the f relief of pain, disappearance of swelling, rapid for tion of a line of demarcation, and improvement general condition. Mr. Turner said this opera was a valuable addition to amputation, which m be avoided in 25 per cent. of cases and delayed 50 per cent., and in his opinion it is particul indicated in early cases of senile gangrene and sh be carried out as soon as the diagnosis is made.

Mr. E. G. SLESINGER (London) could not a that sympathectomy acted by dividing the v constrictor fibres; all modern evidence, he said, against this. He suggested that what were divi were the afferent sensory nerves of the arteries, the effect of sympathectomy was due to breal the reflex arc. He discussed arterial pain compared the pain of angina pectoris and abdom with that of incipient gangrene. In his experi the operation succeeded when there was reflex sp in addition to organic narrowing. He could no advantage in the method of alcohol injection sympathectomy which he had performed 25 ti with no mortality. Finally, he urged that sym thectomy should be tried in all painful cases organic vascular disease, since it would relieve almost certainly and might, in addition, impr the circulation.

Mr. W. A. COCHRANE (Edinburgh) had trea cases of gangrene by exposing the main artery rubbing it with gauze, and had had successes. considered it of no value in endarteritis obliter but had found temporary benefit in varicose ul

Sir WILLIAM WHEELER (Dublin) had no experi of alcohol injection. He related cases of thron angiitis obliterans in which he had performed s pathectomy with no benefit and with no relie pain, and he stressed the importance of remo the whole sheath.

Mr. R. STL. BROCKMAN (Sheffield) put in a st plea for alcohol injection on the ground of simpli which brought it within the compass of every surg He considered it of value as a preliminary amputation.

Mr. HANDLEY, in replying, mentioned the pos danger of absorption of toxic materials from the gangrenous part as the result of vasodilatation operation.

FALLACIES OF X RAYS IN ABDOMINAL DIAGN

At a discussion held jointly with the Sectio Radiology, Mr. H. J. PATERSON (London) begar pointing out that medicine, being essentially an laboratory methods can never replace clinical ob vation. The chief fallacies as regards surgery m be grouped as: (1) those incidental to X rays those due to errors of technique; (3) those of direction; (4) those of interpretation. Under the speaker said that X rays exaggerated s and a better method of estimating this was the cha method; a further fallacy under this head spasm. Duodenal ulcers were seldom shown X rays, but often inferred when not present, whether gastric ulcers were shown depended on size and depth. Under fallacies of technique instanced the need for exposures in different posit and the importance of having the stomach filled with barium. Fallacies of misdirection co of diverting the attention to some abnormalit less serious import than the main disease. The group of fallacies of interpretation were nume and cases were mentioned of error in connexion

ll-stones, ureteric calculi, appendicitis, gastric er, adhesions, &c. Mr. Paterson said an insidious lacy was the claim that healing of a gastric ulcer uld be shown by X rays. Ulcers are stated to al in a few weeks after alkali treatment, but is e evidence good enough considering the inter- ttent nature of the disorder? Finally, the opener d he did not question the utility but the infalli- ity of X ray diagnosis.

Dr. F. HERNAMAN-JOHNSON (London) stressed e advantage of X rays over charcoal in localising sis of the bowel. In regard to spasm he would ld that spasm persisting after full doses of bella- nna shows some lesion in the alimentary tract. ilure to find organic lesions does not prove their n-existence, and a negative X ray can only exclude ss deformity. He objected to including fallacies misdirection, as it is important to demonstrate y definite lesion. Fallacies of interpretation must ays remain and no radiologist could differentiate X ray evidence only between an inflammatory np and carcinoma. It is important for radiologists indicate which of their deductions depend on ray findings and which on examination and tory. The speaker pointed out the importance not calling an appendix normal because X ray amination does not incriminate it, and stated that pelvic cæcum which does not rise on a barium ema and which contains residue after 24 hours en means appendicitis.

Dr. A. F. HURST (London) said the diagnosis of stric and duodenal ulcer depended largely on the ll of the radiologist and in experienced hands uld be right in 90 per cent. of cases. He would ver diagnose gastric or duodenal ulcer without ray evidence and the same applied to carcinoma. his opinion, if there was no obstruction, all gastric ers would heal if treated medically, provided treat- nt was sufficiently long and thorough, and their heal- g could be shown by X rays. Dr. Hurst mentioned e fallacy by which a not uncommon diverticulum the region of the cardia is mistaken for ulcer.

Mr. W. MCADAM ECCLES (London) stressed the portance of a complete radiological examination, d mentioned cases where incomplete examination ld led to unnecessary removal of the appendix.

Prof. A. FULLERTON (Belfast), after pointing out e necessity of piecing together the evidence of rious investigators in order to make a diagnosis, scussed the value of stereoscopic X rays in differen- ting phleboliths and calcareous glands from inary calculi.

Sir WILLIAM WHEELER appealed to radiologists to llow-up operations performed on cases they had seen, d said it was important not to give too definite negative report lest further observation of the case ght be discouraged. Personally, he thought there s no such thing as medical treatment for chronic stric ulcer.

Mr. RENDLE SHORT (Bristol) spoke of the value coöperation between radiologist and surgeon and the difficulty of proving a negative. In his experi- ce, if the clinical diagnosis and the X ray diagnosis fered, the X ray diagnosis was more often the rrect one.

Dr. T. I. CANDY (Newport) said that cases were en sent for barium meal examination too casually d without adequate notes. He asked that radio- gists should be given proper data and that it ould be remembered that they were often the only its of the team whose opinion was committed to per and could be held against them.

The Chairman, Prof. A. W. SHEEN (Cardiff), spoke the effectual coöperation that existed in his clinic, d said that negative X ray findings were often important as positive ones.

Dr. O. LEWELLIN RHYS (Cardiff) likened the diographer of some years ago to the race-course oster who had to name the winner before the race, d was abused if he failed to do so. Nowadays, e surgeon must bear his share of responsibility r a preoperative diagnosis.

SECTION OF PATHOLOGY AND BACTERIOLOGY.

Sir THOMAS HOUSTON took the chair at a discussion on the

BACTERIAL FLORA OF THE INTESTINE IN HEALTH AND CHRONIC DISEASE

which was opened by Prof. J. CRUICKSHANK (Aberdeen), who surveyed the bacterial contents of the newly born and traced the changes that occur as age advances. He pointed out that the meconium is sterile, but organisms appear in small numbers in the first 24 hours after birth. During the first few days the organisms most frequently found are the *Staph. albus*, *Strept. fœcalis*, and members of the *B. coli* group. In the first sample of the meconium free fæces an organism of the *B. bifidus* type, appears. This latter organism increases in number and replaces other organisms to a large extent. If the child is breast fed, the *bifidus* type constitutes 95 per cent. of the organisms present. In artificially fed infants the predominant organisms are of coliform type. The fæces of breast-fed infants are distinctly acid in reaction, while those of artificially fed infants are alkaline or neutral. *B. bifidus* and organisms of the *acidophilus* type can survive exposure to highly acid fluids, which destroy coliform organisms. Thus the bacterial content of the intestine is related to the chemical reaction. Spore-bearing organisms are absent from the suckling's stool for the same reason. When breast-feeding is over opportunity is offered for the invasion of the alimentary canal by many organisms. The intestinal organisms have been grouped into two types, proteolytic and saccharolytic. Experimentally it has been found that a high carbohydrate diet gives a flora rich in *bifidus* and *acidophilus*, whereas a high protein diet gives a predominance of coliform organisms and spore bearers. Lactose appears to be the determining factor in the production of the saccharolytic type of flora. In 1915 Torrey reported favourably upon the use of lactose in typhoid fever, a most marked change occurring in the bacterial flora. The same treatment has been applied to conditions of intestinal origin in children associated with lassitude and anorexia with diarrhœa or constipation, in which there is proteolytic intestinal flora. A quicker transformation of the flora is achieved by combining lactose diets with cultures of *acidophilus* organisms. Prof. Cruickshank attributed the action of the sugar to its being attacked by *B. coli* and *B. welchii*, the various acid substances produced offering a suitable pabulum for the growth of *B. acidophilus*. This is suggested by the fact that direct inoculation of fæces into milk gives abundant growth of *B. coli* and enterococci in the first few days, but at a later date vigorous growth of *B. acidophilus* occurs. Sugars other than lactose have been tried but the above results have not been obtained. Starchy foods, however, tend to change the flora. The administration of animal proteins, on the other hand, produces a marked proteolytic or putrefactive flora. The speaker emphasised that to change the type of bacteria to the acid variety large quantities of lactose must be used, together with an *acidophilus* culture capable of surviving in the intestine. He further declared that the types of intestinal flora are most probably the result of abnormal intestinal conditions and not the cause of them. Dealing with the subject of auto-intoxication, he said that nothing had emerged from chemical or bacterial research in recent years to support the view that harmful substances are elaborated by bacteria in the intestine and then absorbed. It had been shown that a closed-off loop of intestine may contain very toxic material, but this is incapable of deleterious effects until the intestinal mucosa is grossly damaged. Experimentally produced intestinal obstruction in dogs tended to show that the resulting toxæmia is not so much due to bacterial disintegration above the obstruction as to mechanical disturbances below. In chronic ulceration there is frequently no evidence of intestinal toxæmia in many cases, although it might

be expected that absorption of toxic substances would take place at the site of damage of the mucosa. Many workers have held that intestinal mucus is an important defence against the invasion of organisms. Absence of vitamin A from the diet has been shown to produce changes in the mucous glands, and it is believed that these changes permit the entry of organisms normally held at bay. These views have been confirmed by further work in which animals have been fed on a diet deficient in vitamin A and subsequently found to be much less resistant to pathogenic organisms administered by the alimentary canal than other animals on a normal diet. It has been also shown that there is a relationship between the reaction of the intestinal contents and the occurrence of rickets, in this latter pathological condition the cæcal contents being alkaline while administration of cod-liver oil results in a change to an acid reaction. Deficiency in vitamin B is also associated with alkalinity of the cæcal contents. In considering the possible relationship of pernicious anæmia and intestinal toxæmia, it was pointed out that such relationship had not been proved. *B. welchii*, one of the organisms held responsible for the condition, is present in normal stools and no increase in pathogenicity or hæmolytic power has been found in pernicious anæmia. Further, bacterial toxins similar to that of *welchii* may be administered by the mouth without producing specific symptoms. Prof. Cruickshank strongly emphasised the importance of realising that an enormous variety of organisms can be cultured from normal fæces by various bacteriological methods, and he deplored the too often labelling of organisms as pathogenic with immediate recourse to the use of vaccines. Many of the organisms occurring in the intestine are ingested in the food and dust and are passively carried by the intestinal contents. Others find conditions suitable for multiplication. Before accepting an organism found in the stool as the causative agent even in acute intestinal disorders, much evidence other than its presence in considerable numbers, or that it shows pathogenic properties on injection into animals, must be presented. The organisms in the human intestine were compared with those occurring in the soil, the flora in each case being determined by the nature of the available food material. If the intestinal contents could be more frequently regarded as material which is outside of the tissues, and separated from these by a mucous membrane which is endowed with peculiarly selective absorptive powers, there would be less tendency to regard the bacterial flora of the intestine or its individual members as concerned in the causation of many chronic conditions in the human subject.

Discussion.

Sir THOMAS HORDER supported Prof. Cruickshank's contentions and said he was glad to receive academic support to his own beliefs on the subject. The standards at present used as criteria of pathogenicity of intestinal organisms are unsatisfactory. Further, there is no standard technique, with the result that clinicians are at a loss to understand the varying bacteriological reports on the same sample of material submitted to a variety of workers.

Prof. J. H. DIBLE (Cardiff) described a large series of investigations of intestinal organisms during the period of the war. In the first group of this series Morgan's No. 1 bacillus was extremely rare. There were no cases of dysentery in this group. In successive groups dysentery became a frequent occurrence and Morgan's No. 1 became proportionately more frequent. The criteria on which the diagnosis of hæmolytic streptococci is based was also carefully considered. Some methods show a large percentage of these organisms in the fæces in certain cases, but a more detailed and extended investigation throws doubt on the findings recorded. Prof. Dible also pointed out the extreme difficulty of determining the exact nature of a normal intestinal flora.

Dr. A. F. S. SLADDEN (Swansea) spoke from the point of view of a routine bacteriologist. He emphasised the need for clarity on this subje Regarding technique, he believed that material fr the mucosa rather than mixed fæces should be u in bacteriological investigations. Direct examinat of stools for micro-organisms he considered of doubt use. A new method of investigation is required, such a method must be short to be of value to clinical bacteriologist.

Dr. L. P. GARROD (London) had carried out a se of careful investigations in an attempt to establ what fraction of the intestinal bacteria in health disease is composed of streptococci. He was able show that a low carbohydrate diet was associa with a diminished number of streptococci. He unable to show that the bile in the intestine had effect on these organisms, neither did the chemi reaction influence the relative numbers. In cases pernicious anæmia, colitis, and chronic arthritis definite increase of streptococci could be fou Dr. Garrod believed that estimation of the numb of streptococci as an indication of pathogenicity misleading.

Dr. A. P. CAWADIAS (London) dealt with clinical aspect. He classified intestinal infection i extra-infection and auto-infection. The au infections may be of saccharolytic or proteoly type. He had obtained good results by the use vaccines. He said further that cases of au intoxication occurred with no symptoms of intesti disturbance. He considered the possibility of n anaphylaxis being the cause of these latter conditi should be given every consideration.

The CHAIRMAN expressed the opinion that percentage of streptococci found in the stools depe on the cultural method used. The discussion shown that no useful conclusions could be dra from a bacteriological examination of the stools w present technique. It would be, however, difficult convince clinicians on this point. An import point in favour of absorption of organisms from intestine is the presence of intestinal organisms remote parts of the body. The speaker had inve gated several cases in which the enterococcus believed to be the organism causative of lesions urinary tract and nose. An organism had b isolated from stools in cases of ulcerative colitis Burger and by Houston. This organism, believed be the cause of the associated lesion, is said by speaker to be of enterococcus type. He had obtained good results from vaccines in cases believed intestinal auto-intoxication of enterococ type.

Reply.

Prof. CRUICKSHANK, in reply, said it is necess to show that organisms or their toxins are absor before good results said to be obtained by vacci can be claimed to be due to antibodies. If chem substances are absorbed the formation of antibo to combat them is unlikely. He expressed doubt the benefits claimed from vaccine treatment. possibility of anaphylaxis as a resultant of distur intestinal conditions was worthy of consideratio

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SECTION OF ORTHOPÆDICS.

UNDER the presidency of Sir JOHN LYNN-THO a discussion on

LOW BACKACHE AND SCIATICA

was opened by Mr. W. A. COCHRANE, who said t careful eliminative diagnosis left a large group wh was essentially orthopædic, and which included industrial lame backs. A painstaking and meticul routine examination was of the utmost importa Special attention must be paid to the anatom type of the individual. The slender, tall and lan or small and delicate patient was unfit for he work and subject to functional breakdown of back. The second point for consideration was impairment of the normal balancing mechanism bad posture. The lumbo-sacral joints in partic

re overloaded in heavy people with prominent ging abdomens, and the sacro-iliac joint was also osed to static insult from flat-foot, short leg, or a affection. When X rays revealed no intrinsic on of the lumbo-sacro-iliac region the need for urate diagnosis was acute. A negative X ray tograph did not warrant the assumption that re was nothing the matter with the patient, and eful reading of good stereoscopic radiograms often ealed a departure from normal in extrinsic lesions. cases of alleged injury the symptoms were usually of all proportion to the severity of the trauma. npression fractures of the spine sometimes followed nparatively minor injuries, and were often over- ked. A lateral view often revealed a lesion that l been overlooked in the antero-posterior view. A nplex and difficult problem was that of the relation- o of anatomical variations of the fifth lumbar tebra to backache and sciatica; was the associa- n causal or casual? As Osgood said, the abnor- lity was to be regarded as potentially contributory, t there was an undoubted connexion between the sence of abnormality and the occurrence and sistence of symptoms.

he most difficult problem in cases of injury was mental one. Malingerers, however, were not mon. The workman was often genuinely deceived o the true sequence of events, and, having little how for his symptoms, was apt to exaggerate.

Differential diagnosis was always difficult, and nite intrinsic pathological lesions of bone and t must first be eliminated. The chief points to noted were the general build and attitude of the ient; the presence or absence of the normal bar curve, of listing or lateral deviation of the ne, of restricted and painful movements, of spasm wasting of muscles, of swelling and points of derness, and the nerve function in the legs.

Clinical Classification.

Acute traumatic strain was a rupture of ligamentous muscular fibres with all the phenomena of acute ury. A lesion in muscle caused pain when the scle was thrown into action; a lesion of fibrous ue when it was put upon the stretch; a lesion one or joint on all movements of the spine. The tment was rest. A superadded infective focus ht keep up the disability, as would also poor ily mechanics and posture. While complete rest advisable for a torn muscle or aponeurosis, a ained joint should be made active as soon as sible.

General postural strain was a condition of general scular fatigue and ligamentous strain. The ient complained of dull aching in the shoulders low back, relieved by rest. There was usually r posture and fatiguing occupation. Treatment by rest, support, and postural re-education.

Lumbo-sacral strain showed itself by dull or acute n indefinitely localised over the lower spine and , chiefly on one side, often accompanied by tica, and generally relieved by rest. Forward ding was limited by spasm of the hamstrings, there was local tenderness on deep pressure and ion of the hip with knee extended was limited. T treatment aimed at flattening the lumbar spine rest, hot fomentations, and suitable exercises.

Sacro-iliac strain, in contrast to lumbo-sacral in, usually affected the slender, visceroptotic type h poor posture. Sacro-iliac subluxation was rare, sacro-iliac joint strain was common. There was rred pain along the first and second sacral nerves, the tender spots were the inferior sacro-iliac ment, the sacro-sciatic notch, and sometimes the k of the sciatic nerve. The diagnostic points had n well set out by M. N. Smith-Petersen.[1] The tment was by rest and support, followed by heat, ssage, and education to flatten the lumbar spine undo the forward tilting of the pelvis. Mild cases were relieved by strapping, but usually a light brace and well-made corsets were required for a time. In more resistant cases the joint must be manipulated or ankylosed.

Combined pelvic joint strain.—Clinical features referable to both joints might be found together. An enlarged fifth lumbar transverse process causing pain usually responded to prolonged immobilisation, and support and operation was often successful. A better plan was to ankylose the lumbo-sacral region.

The Pathogenesis of Idiopathic Sciatica.

A mass of reliable evidence was now available to prove that many cases of sciatica could be traced to an anatomical lesion or abnormality in the lumbo-sacral region of the spine. There was localised pain and tenderness on deep pressure, sciatic scoliosis and pain referred along the sciatic nerve, which was not usually tender. Painful semi-sacralisation of the fifth lumbar vertebra was now a well-recognised entity. Abnormalities of the facets were not unusual, and poor posture still further reduced the size of the small foramen, already filled with the large fifth lumbar nerve. Treatment was by prolonged recumbency and immobilisation of the spine, combined with hyperæmia.

Mr. P. J. VERRALL said that in the backache of pregnancy less and less could be ascribed to uterine misplacements, though intrapelvic trouble might lead to pain referred along the third sacral nerve, much more superficial than the pain of sacro-iliac strain. A large factor in the production of this pain was the chronically over-distended rectum. The commonest causes of backache were: (1) Chronic overstrain of the erector spinæ or abdominal muscles. The muscles tried to maintain tone and then gave way, causing low backache in the case of the erector spinæ and lordosis in the case of the abdominal muscles. (2) Fixed flexed hip, due to irritation of the psoas by a chronically inflamed appendix or overloaded sigmoid. In these cases there was always tenderness in one iliac fossa. (3) Subinvolution of the sacro-iliac joints. Relaxation of these joints occurred during pregnancy and the menstrual periods. A subsequent involution similar to that of the uterus should occur. If this failed, backache was the result.

The typical deep tenderness over the sacro-iliac joints was always found, and the other sacro-iliac tests were positive.

In sciatica following pregnancy the question of how much was due to toxæmia and how much to trauma had to be decided. There was no doubt that both fourth and fifth nerves might be injured, as in maternal obstetric paralysis.

Mr. D. MCCRAE AITKEN said that with the present school medical inspection two most fruitful sources of backache—round shoulder and hollow back—were fast disappearing. Crush injuries were much commoner in young children than was generally believed, as they occurred when the bones were still largely cartilaginous. The long back was ill-supported by the erector spinæ and the importance of the oblique and quadratus lumborum muscles was often overlooked. Much of the pain was probably due to quadratus lumborum. "Where you have tension, there you have pain." It was at the origin of the muscles from bone that the strain occurred, and when the muscles gave way the strain fell on the ligaments, causing swelling and pain. In treatment, consideration must be paid to the existence of a toxic element, especially large bowel absorption. In "ricked back" a strip of muscle often got kinked over a bony process producing an elongated swelling. Manipulation would release this strip and give a dramatic cure.

Mr. WHITCHURCH HOWELL agreed that the efficient treatment of round shoulders, hollow back, and scoliosis would go a long way in preventing backache. He discussed the diagnosis of backache, which should be grouped under the headings of: (1) lumbago, (2) anatomical abnormalities, (3) trauma, (4) sciatica.

[1] Jour. Bone and Joint Surg., 1926, viii., 118.

The latter should be subdivided into true and false (due to pelvic lesions, arthritis of hip, &c.).

Mr. ROCYN JONES said that cases of backache might be divided into two groups—the traumatic and the postural (including the industrial lame backs). Both groups were complicated by infection. Difficulty in diagnosis arose between lumbo-sacral and sacro-iliac lesions. In lumbo-sacral lesions the pain was in the mid-line, there was rigidity of the lumbar spinæ, and the leg-raising test gave equal results on both sides. In sacro-iliac lesions the pain was below the posterior superior iliac spine, the lumbar spine was not rigid, and the leg-raising test caused earlier pain in the affected side. Stereoscopic X rays should always be taken. He stressed the difficulty in the differential diagnosis between sacro-iliac strain and early tuberculous disease. Until bony changes appeared in the latter differentiation was impossible. As regards treatment he agreed entirely with Mr. Cochrane.

Discussion.

Mr. ALAN TODD spoke of the causation of lordosis with backache in young men. Paralysis of the abdominal muscles due to muscular dystrophies, or anterior poliomyelitis and visceroptosis were the causes of several recent cases he had treated. Adequate supports by belts relieved these conditions, but in nonparalytic cases must be regarded as a temporary measure only. He emphasised the need for more orthopædically trained masseuses. This would only be obtained by making orthopædic surgery an essential part of medical training.

Dr. R. MANWARING-WHITE said that practitioners were to a large extent responsible for chronic backache, as the initial injury was often trivial and was then overlooked. The importance of toxæmias must not be underestimated.

Dr. W. A. MARRIS maintained that many cases were due to general ill-health. They were, in fact, "tired backs."

Dr. E. SOLLY complained that many patients were sent to him with a diagnosis of sciatica who were really suffering from an intrapelvic growth, frequently malignant, and not even in an early stage. These should be eliminated by careful rectal examination. Joint disease also often led to an error in diagnosis.

Mr. COCHRANE, in reply, said that he hoped to work on the lines indicated by Mr. Verrall—i.e., the relation of constipation, visceral tone, and other intra-abdominal lesions to backache. He pointed out the difference in the postural and kinetic use of muscles and the importance of physical training. He emphasised the importance of careful rectal examination of all cases.

VOLKMANN'S ISCHÆMIC CONTRACTURE.

Sir ROBERT JONES said that few cases were reported, because there was an idea that this condition conveyed some slur on the treatment; it ought, therefore, to be laid down most emphatically and intelligibly that ischæmic paralysis arose without any carelessness on the part of the practitioner. The essential pathological changes were degeneration of muscle and an increase of connective tissue in their substance, often with absence of sarcolemma nuclei. There was a round-celled infiltration and absence of transverse striation. The process was one of absorption and replacement of dead muscular tissue. The deformity was found mainly in children under 14 after injury to the elbow, and was due to pressure. About 80 per cent. of cases were associated with fracture. In a typical case the wrist-joint was palmar flexed, the carpometacarpal bones were dorsiflexed, the interphalangeals flexed, the hand pronated, and the elbow flexed. As a rule sensation and electric reactions were normal and the fingers could be straightened on flexing the wrist. The skin was blue, cold, and sometimes blistered and scarred. The muscles wasted rapidly and became hard and ropy; if the nerves were sufficiently involved conduction might be partially or wholly lost. Symptoms might appear a few hours after injury, and the damage w often completed in 48 hours. The contracture w preceded by numbness, swelling, muscular rigidi and sometimes intense pain. If untreated the def mity increased, from contraction of the fibrous mus and the disproportional growth of bone.

Mild Ischæmia.

Sometimes children were unable, months or ye after elbow injuries, fully to flex their fingers. Th cases suggested that a slight degree of ischæmia mi be quite common, just as blue, swollen fingers mi recover after the relief of pressure from spli Brooks's experiments supported the contention t the hæmatoma within the antecubital fossa mi produce venous block quite apart from bony placement, splinting, or bandaging. Jepson failed to produce anything but very tempor deformity by the application of splints, casts, bandages to dogs. A persistent lesion had only b procured by application of an Esmarch bandage a incision and ligation of the femoral vein. If wound were well drained the contracture could prevented. The chief factor, therefore, in Volkma contracture was a direct pressure from within without, causing acute obstruction to venous fl Inflammatory products added to the press J. J. Thomas had found nerve involvement in 60 cent. of his series.

Prophylaxis.

Under no circumstances, therefore, should an el be tightly bandaged. The fracture should be redu completely and at once. The backward displacem of the humerus must be corrected before putting arm up in flexion; a sharp projecting upper fragm often added to the internal venous obstruct Reduction was not easy if postponed for days. arm should not be bandaged to the forearm nor elbow to the side, but intelligent flexion was fectly safe. If a surgeon could not reduce the frac by manipulation he had better operate than leav All circular compression and splints should be avoi especially if there were much swelling. All c should be critically watched for the first few d If great pain, stiffening, swelling, lividity of fingers, or loss of voluntary movements appeared, arm should be released from all compression elevated. The methods of subcutaneous divisio the antero-ulnar side of the forearm and of mul incisions to evacuate the subfascial hæmatoma worthy of further trial.

The prognosis was always grave, and worst o when the nerve damage was excessive, when obstruction to circulation remained pronounced, when there was only mass movement in the fin and the wrist was fully flexed with the forearm in extreme pronation. Treatment of the establi condition was mechanical or operative, the aim t to keep the forearm supinated. The former lin treatment consisted in gradually extending first fingers, then the metacarpophalangeal joints, the wrist. Physiotherapy had an assured position should include radiant heat, contrast bathing stupes, gentle massage, and electrical stimulatio the muscles. When a nerve was divided oper was imperative, and the after-care was most impo in cases of tenoplasty. Myotomy and tenotomy not to be recommended. Free excision of the el joint might be indicated when there was contra of tendons and fixation of the forearm in pronati

Practitioners must insist on an X ray photog or a refusal of it in writing, and should warn patient of the possible serious results of an e injury: Volkmann's contracture and myositis ficans. Further, they should join a medical de union, for the law might be invoked whatever did.

Mr. W. ROWLEY BRISTOW pointed out that isch paralysis meant death of muscles, therefore faradic and galvanic reactions were lost; in milder cases they would be normal. Nerve s was worth while, even if the muscles were be

overy, as it restored gross sensibility. He emphad the fact that the position for setting up fractures he elbow was not "full" or "acute" flexion, but tial flexion across the chest.

Why the Forearm Only?

Ir. D. McCRAE AITKEN remarked that Sir Robert es never under any circumstances "stretched" a e "on splints"; he was most careful not to a limb up in any tension. Volkmann's contracwas one thing—primarily a congestion, a deposi of lymph, and an organisation of fibrous tissue ughout the muscle, producing strangulation; ve injury was another thing which might occur he same time and ought to be dealt with at once. suggested that the reason why the forearm was ticularly affected was that its muscles were remely highly organised with quick and fine ex adjustments to each other, and therefore ly vulnerable in their function. He quoted a which suggested that something depended upon ducation of the coördinating movements, and so n the development of muscles which might not erwise be restored to function.

Ir. H. PLATT put forward an anatomical explana of the susceptibility of the forearm muscles, which se from a small origin, and swept up obliquely, losed in a very tight compartment with a t of unyielding fascia. Between internal and rnal condylar groups the biceps tendon was rposed. In this "box" it was easy to get pressure tructing the venous return along the venæ comites he ulnar recurrent arteries. The median nerve, sing between the heads of pronator radii teres, vitably get strangled as the fibrous tissue conted. A great advantage of operation was that nerve could be freed and the muscles stripped the epicondyle, thus giving a very good start.

Ir. D. S. MIDDLETON recorded some investigations Volkmann's myopathy, particularly as it affected sternomastoid in congenital wryneck. Scar ue only occurred as a result of muscular death n the venous drainage was obstructed so that products of autolysis could not be removed by usual channels. They thus formed an irritating ign body which was dealt with by the usual cess of revascularisation and scar formation. ee or four days after venous ligature all the scles were invariably found cyanosed, swollen, and rotic, but a few months later some of them would found to have recovered. A striking thrombosis urred in the venous tree and was organised. bably the temporary interference with venous rn produced by ligature was not enough to cause osis, but was converted into a secondary perent interference by thrombosis.

natomically there was little connexion between deep and superficial venous systems of the foreus below the bend of the elbow, and the venæ nites of the ulnar arteries were much larger than se of the radial. At the bend of the elbow there a venous plexus that could be covered with a pence, and pressure on this meant obstruction to venous return from almost the whole forearm. profunda vein entered over the firm fibrous arch necting the radial with the humero-ulnar origin he flexor sublimis digitorum. A hæmatoma would e the veins down on to this edge and produce truction. Drainage operations therefore seemed sonable. Mr. Middleton mentioned that of José ges, of Buenos Aires, who freely divided all the neurotic sheaths in a zigzag fashion to allow ansion and free drainage. If thrombosis had ted, however, operation could not be expected give complete recovery. Mr. Middleton concluded t Volkmann's ischæmic contracture resulted from rference with the venous return by a hæmatoma a definite, localised spot in the antecubital fossa. depended therefore on causes associated with the ial injury, and methods of treatment—or the ence of treatment—played a minor part, if any, its production. It was not yet possible to say which cases would develop this complication, and it was doubtful whether that knowledge would materially assist its prevention.

Discussion.

Mr. TODD said that in view of the gross injustice which had recently been done to a member of the profession it was the duty of everyone to record cases of ischæmic paralysis occurring in the absence of any kind of splinting, strapping, or bandaging. He described two such cases, one an extremely bad and hopeless one following a fracture which had lain loose on a pillow without treatment, and the other, less grave, following dislocation of the elbow which had been reduced and sent away in a sling. He pointed out that it was never necessary to use an anterior splint or occlusive plasters for any fracture of the forearm; adequate posterior splintage gave perfect reduction. The teaching that a pad under the anterior splint helped to separate the bones of the forearm was false and pernicious.

Mr. HOWELL recorded some personal experiences, and pointed out that Volkmann's contracture was not a common thing, but that every injury of the elbow-joint ought to be regarded as a potential ischæmic paralysis. The treatment was to incise the hæmatoma, and to follow in detail Sir Robert Jones's method, by which independent joints were splinted with independent splints by an orthopædic masseuse. It was not possible to get more than a ¾-inch gap at operation without risk to the arterial supply. He described a modification of the collar-and-cuff method which ensured supination from the start.

Mr. P. J. VERRALL did not agree that ¾ inch was the maximum gap; the muscles could be stripped right across the interosseous membrane without any injury to vessels or nerves, provided always that this operation was never regarded as anything but an adjunct to Sir Robert Jones's stretching method.

Mr. ROCYN JONES agreed that the condition might come on without any splinting, and that this fact was one of the most important things to bring home to the public. He was glad to hear stress laid on the value of drainage in cases where there was œdema.

Sir ROBERT JONES, in reply, agreed that "acute flexion" was quite the wrong term for the correct position of fractured elbows, and that force should never be used in stretching the fibrous tissue—it was a real coaxing.

EXHIBITION OF DRUGS, SURGICAL INSTRUMENTS, FOODS, AND APPLIANCES.

THE usual trade exhibition was opened in the Drill Hall, Cardiff, on July 24th. A brief notice of the more important exhibits is given below, and will be concluded in the next issue of THE LANCET.

DRUGS AND PHARMACEUTICAL PREPARATIONS.

1. *General Drug Exhibits.*

[46] Allen and Hanburys, Ltd. (Bethnal Green, E. 2), drew attention to the fact that their "Allenburys" infant foods now have added to them a proportion of synthetic vitamin D, ergosterol, so that they fully protect against rickets. Among the "Azoule" brand sterile hypodermic ampoules are sodium salicylate and urethane preparations for the treatment of varicose veins. Liver extract for pernicious anæmia is prepared in powder, tablets, and capsules. "Charkaolin" is a new preparation for fermentative intestinal infections, combining the absorbent properties of vegetable charcoal with the toxin-adsorbing qualities of "Osmo" kaolin. A new laxative is "Byno Chrismol" with a cold-water extract of senna pods. "Iodolysin" is a fibrolytic agent for rheumatoid arthritis and allied conditions.—[60] Bayer Products, Ltd. (19, St. Dunstan's-hill, E.C. 3), showed a series of their well-known preparations, such as "Adalin," "Luminal," and "Plasmo-

quine" for malaria, and drew special attention to "Compral," a rapid analgesic without hypnotic effect; "Phanodorm," an hypnotic for general practice without cumulative action; "Theominal," a combination of luminal and theobromine for arterio-sclerotic conditions; "Hexeton," a water-soluble synthetic camphor preparation for intramuscular and intravenous use; "Novasurol," a water-soluble preparation containing 33·9 per cent. of mercury in a complex non-ionisable form; and "Vigantol," a biologically standardised preparation of irradiated ergosterol, put up in pellets, ovoids, and a 1 per cent. solution in oil, of which 25 drops equals 10 mg. of vitamin D.—[39] Boots Pure Drug Co., Ltd. (Station-street, Nottingham), presented a series of pharmaceutical and toilet preparations, including "Columbrin." "Stabilarsan," "Thiostab," and "Bismostab."—[81] W. Bredt (41, Great Tower-street, E.C. 3) exhibited the "Ysates," dialysates from fresh plants, notably "Digitalysate," "Valerian-Digitalysate," and "Viscysate," prepared from *Viscum album* for conditions of high blood pressure. "Thilocologne," the preparation of ethyl chloride with eau-de-cologne, is now obtainable with a drop nozzle instead of a jet.—[20] Crookes Collosols (22, Chenies-street, W.C. 1) showed all their well-known colloidal preparations, such as argentum, iodine and manganese, and some new ones, including "Collosol Metallic Bismuth," a 5 per cent. preparation of finely divided metal which is usually absorbed within 10 days of injection, and "Collosol Mercurochrome" in dry scale preparation and sterile solution, standardised to obtain a definite percentage both of mercury and bromine. "Collosol Lactomagnesia" contains approximately 10 per cent. of magnesium hydroxide, and acts as an adsorber, a mild laxative, and a neutraliser without the evolution of gas. This firm also make some agreeable semi-toilet preparations, including "Collosol Argentum" tooth-paste and "Collosol Zinc" vanishing-cream.—[58] The British Drug Houses, Ltd. (Graham-street, N. 1), displayed their "Æther Puriss"; "Chloroform Puriss"; a non-clogging powdered liver extract, and their vitamin products, "Radiostol," "Radiostoleum," and "Radio-Malt," as well as "Caprokol," their urinary antiseptic; "Caprokol Antiseptic Solution S.T. 37," and their "Ergotoxin Phosphate," as used by A. Bourne and R. Burn.—[43] Burroughs, Wellcome and Co. (Snow Hill Buildings, E.C. 1) gave a prominent position to "Ephedrine," for asthma, hay fever, and leprosy; to "Allipol," the sodium salts of the less irritating fatty acids of hydnocarpus oil, and to "Avenyl," for leprosy complicated with syphilis. They also showed "Wellcome" liver extract and a representative display of standard drugs, sera, vaccines, and tuberculins.—[59] Evans Sons, Lescher and Webb, Ltd. (50, Bartholomew-close, E.C. 1), showed the various pharmaceutical specialties of this firm and the "Medi-soaps" manufactured by Charles Midgley, Ltd., of Manchester. Careful selection, preparation, and standardisation go to the making of this firm's gland products, which now include "Thymus Co.," "Mammary Co.," "Thyrosex Co.," and "Sexatones." This firm claim that their "Hepatex" is the cheapest and most concentrated liver extract on the market, one drachm being equivalent to two ounces of fresh liver. Their "Infundibulin" is now supplied in a special narrow-necked ampoule which can be opened without a file.—[35] Fassett and Johnson, Ltd. (86, Clerkenwell-road, E.C. 1), added to the well-known Angier's Emulsion and "California Syrup of Figs" a display of "Bemax," the new vitamin B preparation made from the detoxicated embryo of cereals.—[47] Ferris and Co., Ltd. (Union-street, Bristol), showed a series of fine chemicals and pharmaceutical preparations, particularly those of Martindale's "New Pharmacopœia"; also glandular products, cheap sterile accouchement outfits, and surgical dressings, specially set up in cabinets of "Ever-ready Caddies."—[27] Genatosan, Ltd. (Loughborough, Leicestershire), are very familiar for their "Sanatogen," "Genasprin" and "Formamint," and were displaying, as well as detoxicated ordinary vaccines, their local immunity produ including an anticoryza vaccine spray.—[24] Hoffmann-La Roche Chemical Works, Ltd. (51, Bo road, N. 13), draw special attention to their "Allon non-habit-forming hypnotic and analgesic, "Isacen" non-toxic synthetic aperient, which gra ally liberates di-hydroxyphenyl-isatin under influence of the alkaline secretions of the intest "Somnifaine" is a liquid hypnotic of the barbit group which can be administered orally, intramu larly, or intravenously.—[10] J. F. Macfarlan and (109, Abbey-hill, Edinburgh, and 32, Bethnal Gr road, E.1) showed a series of pure pharmaceut chemicals, including alkaloids and capsules of a nitrite; anæsthetics, especially ethyl chloride, dressings and ligatures.—[28] Oppenheimer, Son Co., Ltd. (179, Queen Victoria-street, E.C. 4), stre their new vitaminised preparations, such as "Vit a concentrate of the unsaponifiable fraction of liver oil, 100 times stronger than the natural This is supplied in "Palatinoids," equivalent to teaspoonful and one tablespoonful respectively the fresh oil. The little capsules make a most venient vehicle of administration for young child Irradiated ergosterol is also put up in "Palatino form, and "Malt and Vitad" is a preparation equ lent to a 25 per cent. cod-liver oil and malt, free from the unpleasant oily fraction. "Vitad also put into the well-known reconstructive f "Roboleine."—[41] Parke, Davis and Co. (50 Beak-street, W. 1) demonstrated their recogn remedies, including quinine hydrochloride and ureth solution for sclerosing varicose veins, and also m recent introductions, such as "Adrephine," aqueous solution for local use, combining the r relief of adrenalin with the sustained action ephedrine; "Metatone," a tonic elixir contai vitamin B, nucleinic acid, and glycerophospha and "Paroidin," a standardised extract of bo parathyroid glands for injection. "Oxytocin" is pituitary substance that acts on involuntary mu and "Vasopressin" is the pituitary pressor princ These two preparations will soon be on the ma Puerperal septicæmia streptococcus antitoxin is a able for prophylaxis and therapeusis, while the s of "Immunogens," originating in the P., D. and Laboratory, is now a long one.—[50] The Sa Chemical Works (5, Wigmore-street, W. 1) had view their well-known products "Femergin," "H mine" and "Bellafoline." "Allisatin" is t tasteless preparation of garlic. "Calcium-Sand is obtained from an oxidation product of glucos a special process and contains 13 per cent. of l "Sandoptal" (isobutyl-allyl-barbituric acid) i new safe hypnotic, well tolerated by the aged.— Schering-Kahlbaum, Ltd. (3, Lloyd's-avenue, E.C emphasised the value and safety of their non-nar analgesic "Veramon," and introduced "Solgar a new gold product of low toxicity, particularly u in leprosy, a 15-g. dose of which can be given safety. Two other new products are "Vasa camphoric acid salts of mandragora alkaloids, train, air, and sea sickness, and "Synthalin B much less toxic product than the old Synth "Atophan Balsam" is an amyl ester of "Atoph for inunction.—[54] W. A. Wharram, Ltd. (34, L lane, Leeds), make several popular pepsin preparat such as "Liq. bismuth co. c. pepsin," and very n other therapeutic products. Mention may be r of ephedrine tablets for oral administration; "Lir heroin hydrochlor. c. turpin. hyd."; "Syr. pulmo Co.," containing codeine phosphate, guaiacol, calcium phosphate; "Ung. analgesic," a combin of methyl salicylate, menthol, eucalyptol and camp and "Ung. stimulans," a mustard preparation u for rheumatic and neuralgic conditions.

2. *Special Drug Exhibits.*

[22] Anglo-American Oil Co., Ltd. (Albert-st N.W. 1), pointed out that the price of their "Nu has now been considerably reduced, and that "Mis

now supplied in an improved atomiser with a cap.—] Behring Institute (Marburg-L., Germany, and Bredt, 41, Great Tower-street, E.C. 3) were showing in their delightfully convenient "Vacuum Venule" the collection of blood samples, as well as "Yatren" pills, powders, and solutions, and "Yatren-Casein" protein shock therapy.—[49] Bristol-Myers Co. 2, Cheapside, E.C. 2) showed "Sal Hepatica," a ne regulator; "Ziratol," a non-toxic naphthaline iseptic; and "Ipana," a tooth-paste containing atol.—[6] G. W. Carnrick Co. (Brooks and Warton, Ltd., 40–42, Lexington-street, W. 1) needed introduction with their "Hormotone," "Trypen," "Secretogen," "Kinazyme," and other ndular compounds, but reminded the profession of care with which these are prepared and standised.—[67] Deshell Laboratories, Ltd. (Braydond, N. 16), argued once more the superiority of 'etrolagar" in its four forms: plain, unsweetened, aline, and with phenolphthalein. They laid stress its value for cleansing, evacuating, or retention mata, as it is miscible with anything, allays spasm, l holds the medicament in even dissemination on mucous surface.—At Stand [26] Eno's Fruit Salt meroy-street, S.E. 14) held its own, and was a eshing draught in the heat of the opening day.—] Ichthyol Co., Ltd. (18, Adam-street, W.C. 2), oduced "Albichthon," a colourless sulphur preation from the raw material of ichthyol, an effective tericide and clean to handle. Bristow's medicated chthyol" toilet preparations were also on view.—] Jeyes' Sanitary Compounds Co. (London) showed efined preparation of "Cyllin" for medical and gical use, with a Rideal-Walker coefficient for *typhosus* of 24 to 26; as well as capsules for stinal antisepsis, pastilles for the throat, soap der, and dental and shaving cream.—[7] Kaylene, . (7, Mandeville-place, W. 1), this year emphasised value of their colloidal silicate of alumina in ntile diarrhœa.—[71] Mond Staffordshire Refining , Ltd. (47, Victoria-street, S.W. 1), showed for the time the "Monsol" products: pastilles, ointnt, capsules, and anti-mosquito stick. The manuurers maintain that Monsol is practically nonic and can be used intravenously, and that a 00 solution is equivalent to 1/40 lysol at oneh of the price.—[84] The Saccharin Corporation, . (72, Oxford-street, W. 1), showed "Novocain" powder, tablets, and solution, and "Glaucosan," ew and very strong myotic prepared by Dr. C. nburger, of Berlin, for the treatment of glaucoma. 57] Scott and Turner, Ltd. (Gallowgate, Newcastlen-Tyne, and 211, Blackfriars-road, E.C.4), dispensed ndrews' Liver Salt" as in previous years with no of diminished activity.—[83] The Semprolin Co., . (18, Leather-lane, E.C. 1), prepare a wide range emulsions of high viscosity paraffin, of which naps the most interesting are those containing ectively guaiacol and salol. "Carmex" is a hing laxative mixture for infants. The firm are ll to find that the fact that their products are rely British is being appreciated by the medical ession.

3. *Toilet Preparations.*

3] Kolynos Inc. (Chenies-street, W.C. 1) and Pepsodent Co. (42, Southwark Bridge-road, S.E. 1) ented their well-known dental creams. The former showed a skin soap, liquid Kolynos for mouthh or gargle, and a denture powder, and the latter onstrated the rotary cleansing action of their ecoater" toothbrush.

Food and Drink.

2] Benger's Food, Ltd. (Otter Works, Manchester), layed the unique features of their food by a series lides, and reminded the profession of the value heir peptonised beef and chicken jelly, extract of marrow, and essence of rennet.—[44] Cadbury s., Ltd. (Bournville), emphasised the food value ilk chocolate, in every half-pound of which there one and a half glasses of full cream milk.—[51] son Ackermann-Laurence (St. Hilaire-street, Florent, France) gave special prominence to an exhibit of sparkling Saumurs; their Brut Royal is free from tannic acid and excess of sugar and alcohol, and is rich in ethers. On the same stand Messrs. Francesco Cinzano, of Turin, exhibited Italian vermouth free from preservatives, wormwood, and wood spirit.—[1] Energen Foods Co., Ltd. (Willesden, N.W. 10), showed their wide range of foods, originally prepared for diabetic patients but now used in all metabolic disorders (see THE LANCET, 1927, ii., 1337). Their "Endobran" biscuits are prepared according to Dr. Poulton's formula, with a low carbohydrate and a high fat content.—The attendance at Stand No. 95, that of William Gaymer and Son, Ltd. (Attleborough and London), showed no sign of diminishing during the whole of the Exhibition. Their "Special Dry Still" cyder is recommended for diabetics and sufferers from gout. Sufferers from heat benefited from their "Medium Dry" and "Medium Sweet."—[30] Granose Foods, Ltd. (Watford), showed their crisp, steam-cooked biscuits made from whole wheat.—[93] H. A. G. Coffee Co., Ltd. (40, Theobalds-road, W.C. 1), dispensed refreshing cups of their coffee, and showed alarming specimens of the caffeine which had previously been extracted from the bean.—[80] Horlick's Malted Milk Co., Ltd. (Slough, Bucks), have added to their well-known milk preparation a pleasant malted milk toffee, and lay stress on the value of their shadow-food, consisting only of two ounces of malted milk, four ounces of barium sulphate, and water. A new mixer was also demonstrated.—[65] Ingram and Royle, Ltd. (45, Belvedere-road, S.E. 1), showed the many mineral waters for which they are agents, including Vichy-Célestins, Contrexeville, Carlsbad, and Hunyadi János.—[23] Keen, Robinson and Co., Ltd. (Carrow Works, Norwich), testified to the continued success of Almata as a food for infants, invalids, and nursing mothers, and have issued a new prescription for the preparation of their "Patent Barley," so that the mother is saved the trouble of preparing barley-water first. Robinson's Groats, Robinson's Oats, and Keen's Mustard Ointment need neither introduction nor recommendation.—[8] Montgomerie and Co., Ltd. (Ibrox, Glasgow), showed Berina Infant Foods and Berina Malted Milk invalid diet, as well as Bermaline Bread.—[70] Nestlé and Anglo-Swiss Condensed Milk Co. (6 and 8, Eastcheap, E.C. 3) emphasised the vitamin content, bacterial purity, and dietetic value of their full-cream milk and malted wheaten products.—[45] Oxo, Ltd. (Thames House, Queen-street-place, E.C. 4), had a new preparation, "Liveroid," for pernicious and general anæmia. To their "Oxoid" standardised endocrine preparations they have now added an ovarian and a parathyroid.—[61] Alexander Riddle and Co., Ltd. (Bancroft-road, E. 1), demonstrated practically the refreshing properties of Stower's Lime Juice, Lemon Squash, and Orange Squash.—[11] Vitalia, Ltd. (17A, Boniface-street, S.E. 1), showed that "Vitalia" Meat Juice with soda-water could be a refreshing drink as well as a valuable food.—[82] West Surrey Central Dairy Co., Ltd. (Guildford), have added to their well-known "Cow and Gate" infant food two new preparations: "Brestol," a humanised cream of standardised fat, protein and vitamin content, and "Lacidac," an acid milk powder with a hydrogen-ion concentration when reconstituted of pH 4·6.

Surgical Instruments.

[46] and [63] Messrs. Allen and Hanburys, Ltd. (48, Wigmore-street, W. 1), called especial attention to their improved "St. Bartholomew's Hospital" pattern operation table, with new patent self-locking device for obtaining the Trendelenburg position, overhung by the "Pantophos" shadow-free light, in which heat and glare are eliminated. Among their large selection of stainless steel surgical instruments may be mentioned Souttar's craniotome, scalp clips, and steam cautery; Sargent's skull and laminectomy instruments; Tudor Edwards's thoracotomy instruments; Rowland's fasciatome for living sutures; Cope's universal "Duralumin" splint for Colles

fracture; gynæcological instruments made for Messrs. Comyns Berkeley and Victor Bonney, and rectal instruments for Sir Charles Gordon Watson; the "Rotanda" blood transfusion syringe; a unique ratchet for retractors; British cystoscopes, and the light "Oslite" head-lamp.—[9] Albert Brown, Ltd. (Chancery-street, Leicester), showed a selection of stainless steel instruments and electric sterilisers, in particular Georg Wolf bladder instruments with Zeiss optics, a true-colour filter being built into them so that the eye can follow the movements of a lithotrite and see the bladder contents in their natural colours without fatigue. An interesting head lamp for ear, nose and throat work was fitted w th an iris diaphragm and focusing lenses, so that the light could be intensified on a small area without dazzle.—[93A] Perhaps the most interesting exhibit in the whole show was that of Cameron's Surgical Speciality Co. (15, Stratford-place, W. 1). This apparatus provides, at a price well within the reach of the general practitioner, an endoscopic and inspection series which can be illuminated from any electric light plug and which the makers guarantee to be absolutely shock-proof and "fool-proof." The nasal sinuses can be trans-illuminated, root apices revealed, and foreign bodies detected; the retina can be lit up by pressing the bulb against the lower eyelid, and the veins are thrown into strong relief by pushing it into the soft tissues of a limb, so that intravenous injection in fat subjects loses its horrors. For the surgeon there are abdominal lights, which are guaranteed to withstand repeated sterilisation by boiling or steam pressure. The light used is of a wave-length peculiarly suitable for penetrating soft tissues. We advise every practitioner to inspect this for himself.—[76] C. W. Dixey and Son (13, St. Andrew's-crescent, Cardiff, and 3, New Bond-street, W. 1) showed a series of ophthalmoscopic instruments, particularly the Aves deviograph for testing the muscles of the eye.—[42] Down Bros., Ltd. (21 and 23, St. Thomas's-street, S.E. 1), included in their exhibit ox-bone plates and screws by Hamilton Bailey; Howarth's improved model of Chevalier Jackson's bronchoscopy and œsophagoscopy instruments; Souttar's counterpoised direct electric motor; Ivan Magill's portable intratracheal apparatus for anæsthesia; blood transfusion apparatus by Macintosh and others; and the "Up-to-Date" operation table with recent improvements.—[73] The Genito-Urinary Manufacturing Co., Ltd. (28A, Devonshire-street, W. 1), who are also agents for J. Eynard, Paris, showed a wide range of cystoscopes, bladder and kidney instruments, and diathermy apparatus.—[52 and 69] The Holborn Surgical Instrument Co., Ltd. (26, Thavies Inn, E.C. 1), had on view a large selection of modern surgical instruments in ordinary and stainless steel, including Kidd's female urethroscope; MacReynold's tonsil artery forceps; Guttmann's self-retaining vaginal speculum; the "Speclite" lamp, to clip on to the nose-piece of a shellite spectacle-frame, and the light, compact "Holborn" pocket head-lamp with elastic head-band.—[34] Mayer and Phelps (Chiron House, 59–61, New Cavendish-street, W. 1) pointed out their "Empire" operation-table, in which the Trendelenburg position can be obtained with perfect safety, and in which an improved lumbar bridge has been incorporated; Rowling's anæsthetic table; an outfit to supply a warmed atmosphere of either oxygen, nitrous oxide, or carbon dioxide, or of any percentage combination, with or without chloroform vapour; the "Chiron" fool-proof chloroform inhaler; Eadie's ligature forceps; and Canny Ryall's portable pelvic elevator.—[19] Rayner and Keeler, Ltd. (9, Vere-street, W. 1), showed various ophthalmoscopes and perimeters and a modified simple ophthalmic bracket which can be fastened above the patient's head and swung round in front of him. They also had on view various operating lamps and test types.—[12] The Surgical Manufacturing Co., Ltd. (83–85, Mortimer-street, W. 1), had a selection of new diagnostic instruments, including the Lilliput head-lamp; a new mercurial sphygmomanometer; a new combined ophthalmoscope, laryngoscope, and auroscope; Servic steriliser for dressings, and a convenient iodine container by means of which tincture of io can be carried about in a pocket and applied to patient without staining of clothes or instrument

(To be concluded.)

Special Articles.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Statistics of Venereal Disease.

IN December of last year a census of vene patients was taken by the Health Office and results have now been published. It is stated the registration schedules sent to the medical fession have been answered by 93·6 per cent. of general practitioners, 95·5 per cent. of the vene logists, and 97·5 per cent. of the hospitals and s toriums to whom they were sent, from which evident that the profession has taken great intere the inquiry. The figures show that in Germany t were 18,608 patients who first came for treatn within the period Nov. 15th to Dec. 14th. Of th 432 suffered from more than one venereal dise 76 per cent. had gonorrhœa, 2·1 soft chancre, 5·3 cent. primary syphilis, and 15·1 per cent. secon syphilitic symptoms. Compared with 1919 figures indicate a reduction by one half.

Phosgene Poisoning.

The regrettable accident at Hamburg, where escape of phosgene caused the death of al 20 persons and the illness of some hundred others drawn our attention to the properties of this poi Prof. Straub, of Munich, states that it is a labile substance much used in the chemical indust for instance, in the production of fuchsine. It easily be condensed into a fluid and on contact wet air this fluid is decomposed, developing chlo and hydrochloric acid. These corrode the bronchi produce broncho-pneumonia. Phosgene may enter the living cells and bring about their d and has thus a delayed effect on the organism. gas is produced when chloroform vapours com contact with a flame, and intoxication from cause used to occur sometimes in the days be operating theatres were fitted with electric light.

An International Conference on Scarlet Fever.

A conference of German and Russian me savants, medical officers, and hospital physicians held not long ago at Königsberg for the purpo exchanging views on scarlet fever. Dr. Dei (Berlin) said that in his experience antistreptoc serum had proved very efficacious, no patient ha died to whom the serum was administered in an stage of the disease. When serum was used comp tions also had been rarer and less severe. Korschun (Moscow) and Dr. Bardach (Od described methods of testing the efficacy of individual serum. The Russian members of congress reported that in their country prophyl injections had been made in some 100,000 chil and it had been ascertained that the prote lasted about nine months. This short duratic somewhat surprising as persons who have had sc fever are generally immune for a long period— for the rest of their lives.

Cerebral Research.

The German Institute for Cerebral Rese founded by the late Prof. Kräpelin, has now

nally opened. For a long time its financial basis s somewhat insecure, for the capital had been lost the inflation of currency; but Prof. Kräpelin ceeded in interesting the Rockefeller Institution he matter, and they furnished the necessary funds condition that a certain sum was collected for king the institute. The fund thus opened found scribers both in Germany and the United States, luding Baron Krupp, of Essen, and Mr. James b, of New York, and at last it has been possible open the new building. It has departments for opathology, topographical anatomy, serology, etics, and psychology respectively. A chemical artment under the celebrated analytical chemist, f. Willstätter, is to be opened in the near future. ides the lavishly fitted laboratories there are ms for collections and archives. At the opening emony, which was held in the presence of State municipal authorities, Prof. Bouman, of Utrecht, sented a sum of M.20,000 (£500) in the name of a ign committee. The Kräpelin gold medal was ferred upon Prof. Oscar Voigt, of Berlin, for his earches in the structure of the cerebral cortex.

Venereological Expedition to Russia.

The German Association for Aiding Scientific search, in coöperation with the Health Department of the Soviet Republic and the Russian Academy Sciences, has arranged an expedition to Russia for study of syphilis. It is stated that in Europe philis has undergone an alteration under the luence of civilisation. It is thus essential to study among a rather primitive population where it has n systematically combated for only a few years. a suitable locality the Burjato Mongolian Republic inated beyond Lake Baikal has been chosen. Two man medical men went there last year to select lace for the research and they found that a town led Kulskoe would be convenient for the purpose ause it possesses a hospital. The German Association has supplied the necessary apparatus and fitted out a large serological laboratory. The ssian Government have promised to care for the using and the maintenance of the staff, to have the pital enlarged and modernised, and to facilitate much as possible the work of the expedition. quired and hereditary syphilis will be studied by teriological and serological methods, and the results pared with those obtained in Europe. The edition will include syphilologists, internists, and rologists, and the German party, which will work ler the direction of Prof. Hessner, of the Clinic for nereal Diseases in Breslau, includes Dr. Klemm Dr. Patzig, of the Institute for Cerebral Research Berlin, Dr. Beringer, of the University Clinic for vous Diseases in Heidelberg, three women laboray assistants, and an engineer to look after the paratus. From Russia, where the Government ws great interest in the work, eight medical men, onging to the staff of the State Institute for nereal Diseases, will attach themselves to the edition.

Dr. Wentzler, head of an infants' home in Berlin, s that in his institution the throat of every infant, n if healthy, is daily examined by a nurse, redness any other abnormal condition being at once orted to the doctor. This makes it possible to ect suspected cases of illness at the earliest possible ment, and so prevent epidemics of diphtheria and rlet fever from developing. Owing to the recent rease of diphtheria observed here, he recommends t the same measures should be taken in the schools. nurse should be placed at the school entrance, ose duty it would be to examine the throat of ry child. Where any reddening was discovered rance to the school would be refused until the ld had been examined by the school medical cer, who would decide whether an infectious ease was developing, and whether the child might admitted to school.

MEDICINE AND THE LAW.

Imprisonment for "Nature Cure Practitioner."

MEDICAL practitioners are thinking quite as much of the public as of themselves when they deprecate the indiscriminate and unskilled use of ultra-violet ray and similar treatments. The possibilities of this kind of thing in the hands of amateurs are endless. During last month William Patrick Faulkner, a carpenter, was prosecuted at Marylebone Police-court on charges of obtaining certain sums by false pretences from Ernest Rose, another carpenter. It appeared that the two had entered into partnership and had opened a sun ray clinic and nature cure establishment in Praed-street, with a brass plate describing them as "Drs. Faulkner and Rose, nature cure practitioners and manipulative surgeons." Faulkner had made an agreement with Rose, which it was stated was signed "William Patrick Faulkner, M.D.," providing that each of them should put £50 into the concern and that they should share the profits. It was said that Faulkner told Rose he had just come from Ruskin College, Oxford, and was qualified as a doctor of medicine at King's College, also that he owned a house at Thornton Heath worth £1000. Believing these representations, Rose seems to have parted with about £130 in all. This included £4 which Faulkner seems to have obtained for the purpose of registering with the General Medical Council and 8 guineas for the purpose of registering with the L.C.C. Faulkner was not in fact on the Medical Register and did not pay the 8 guineas to the L.C.C. Mr. Wallace, appearing for the Director of Public Prosecutions, said Faulkner had been previously convicted for falsely pretending to be a registered medical practitioner, and also for obtaining money by false pretences. Mr. Wallace observed, as a warning of the dangers of sun ray treatment by unqualified persons, that one patient, who paid Faulkner a cheque for £6 and had treatment two or three times, was finally sent to hospital where she was found to be suffering from appendicitis. Had she continued her treatment with "Drs. Faulkner and Rose" much longer she would probably have ceased to require any treatment at all. Mr. Bingley, the magistrate, who passed sentence on Faulkner of three months' imprisonment with hard labour on each of two charges (making six months in all), agreed as to the grave danger to the public if people carried on such treatment unless properly qualified. The London County Council will presumably take note of the case. If their statutory powers of controlling such establishments are inadequate, they should be amplified forthwith.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. R. F. MacMahon is placed on Retd. List with the rank of Surg. Capt.

Surg. Comdrs.: R. J. G. Parnell to *Barham*, and as squadron medical officer and for specialist duties (on transfer of flag); and G. H. Hayes to *Warspite* (on transfer of flag).

Surg. Lt.-Comdr. S. R. Johnston to *Vulcan*, temp.

Surg. Lts.: J. J. Keevil to *Barham* (on transfer of flag); and C. H. Egan to *Warspite* (on transfer of flag).

Surg. Lt. (D) H. V. Pell to *Pembroke* for R.N. Barracks, Chatham.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lts. J. M. McC. Wright and J. Stephen to *Victory* for Haslar Hospl., for training.

Prob. Surg. Sub-Lts. E. G. Thomas, R. P. Davies, and D. A. Williams to *Victory* for Haslar Hosp. for training.

ROYAL ARMY MEDICAL CORPS.

Majs. to be Lt.-Cols.: H. T. Wilson, vice Lt.-Col. H. C. Sidgwick, to retd. pay; and R. C. Hallowes, vice Lt.-Col. (Bt. Col.) P. H. Henderson, promoted.

Capts. to be Majs.: R. D. Cameron (Prov.), W. J. F. Craig, J. Bennet (Prov.), W. C. Connell, and G. B. Wild.

Lts. to be Capts.: T. A. J. M. Dodd, R. A. Bennett, W. H. Carter, W. A. D. Drummond, J. G. E. Vachell, J. N. Atkinson, J. D. Corner, and J. T. Smyth.

Lt.-Col. H. C. Sidgwick retires on retd. pay.

Majs. A. W. Howlett, G. S. Parkinson, and J. Startin retire on retd. pay.

Temp. Lt. D. J. Allan relinquishes his commn.

TERRITORIAL ARMY.

Maj. J. H. Owens to be Lt.-Col. and to comd. the 161st (E. Anglian) Fd. Amb., vice Lt.-Col. (Bt. Col.) S. J. Fielding, vacated.

Maj. T. E. A. Carr, from T.A. Res., to be Capt., and relinquishes the rank of Maj.

W. H. Marston (late Surg. Sub-Lt., R.N.V.R.), J. K. Steel, and H. W. Walter to be Lts.

INDIAN MEDICAL SERVICE.

Capts. to be Majs.: Bishambhar Sahai, Manohar Lal Bhargava, D. V. O'Malley, Tirath Ram Khanna, and S. Dutt.

Temp. Lts. to be Temp. Capts.: Ganeshrao Venkatrao Gollerkeri, and Bercut Narain Khan.

COLONIAL MEDICAL SERVICES.

Dr. H. G. Holdbrook, Medical Officer, Federated Malay States, to be Senior Medical Officer, Selangor; Dr. W. H. Hart, Medical Officer, Federated Malay States, to be Senior Medical Officer, Perak.

Dr. S. P. Joseph, Mr. M. Jinadasa, and Dr. A. A. M. Weeraperumall, medical officers, to be Provincial Surgeons, Ceylon.

The following appointments have been made: Capt. P. H. Martin, Pathologist to the Institute of Medical Research, Federated Malay States; Dr. G. E. M. B. Dodds and Dr. C. E. M. J. Libert, Medical Officers, West African Medical Staff; Miss G. Lowe, Medical Officer, Nigeria; Dr. G. M. M. Menzies and Dr. W. Hunter, Medical Officers, West African Medical Staff.

DONATIONS AND BEQUESTS.—As the result of the recent Westminster Hospital Week, which was organised by representatives of the principal firms in Westminster, the institution has received £3500.—Mr. William Lyon, Carnoustie, left £500 each to the Dundee Royal Infirmary and the Forfar Infirmary to be applied to name a bed after him.—Mr. John Norman Dickinson, of Cockermouth, Cumberland, left £500 each to the Whitehaven and West Cumberland Infirmary and the Cumberland Infirmary, Carlisle, and £200 to St. Dunstan's Hostel for the Blind.—Mr. John Denniston Wilson, of Shaftesbury-avenue, London, and formerly of the Mercantile Bank of India, Batavia, Java, who left £57,188, after a number of private and other bequests amounting to £20,000, gave £1000 to the Hospital for Sick Children, Great Ormond-street, London, and the residue of the property to the executors for charities and hospitals.—Miss Alice Isabella Avery, of Athelney, Torquay, besides other bequests, left over £7000 to charities, including £1000 each to the Edinburgh Medical Missionary Society and the Children's Emigration Homes, and £500 to the Birmingham Medical Mission.—The Manchester Board of Guardians have decided to contribute £1000 towards cancer research.—Mr. Edward Palgrave Simpson, of Durham Villas, Phillimore-gardens, London, left, among other bequests, £2000 to St. Dunstan's Hostel for the Blind; £1200 to the Jenny Lind Infirmary, Norwich; £1000 each to Dr. Barnardo's Homes and the National Lifeboat Institution; £500 each to the West London Hospital, the National Industrial Home for Cripple Boys, Kensington, the Royal Hospital for Incurables, Putney, S.W., the Kensington District Nursing Association, the Church of England Homes for Waifs and Strays; £250 each to the Children's Country Holiday Fund, the Girls' Friendly Society, and the Holiday Cottage, Aston Clinton; £200 to the Norfolk and Norwich Hospital; £100 each to the After-Care Association, the Institution for the Indigent Blind, Norwich, the Eye Infirmary, Norwich, the Children's Convalescent Home, Lowestoft, and to the National Benevolent Institution.—Mr. Arthur Frederic Pope, of Manchester, among other bequests, left £500 to the Northern Counties Hospital for Incurables, £500 to the Manchester and Salford Hospital for Skin Diseases, and £500 to the Manchester Royal Infirmary.

Correspondence.

"Audi alteram partem."

SMOOTH AND ROUGH VARIANTS OF BACTERIA.

To the Editor of THE LANCET.

SIR,—The letter by Surgeon-Commander Sheldon Dudley in THE LANCET of August 4th emphasis the present difficulties in attempting to analyse a classify the observed variation in bacteria. Nam such as "smooth" and "rough" given to spec instances of variation in the intestinal group ha perhaps rather rashly been transferred to sup ficially similar variants in other groups. Morpl logical studies of colonies by Baerthlein and othe though of great importance in establishing that su variations do occur, do not of themselves lead ve far on account of the great variety of the coloni the uncertainty of the criteria based on colo morphology alone and the gradations betwe different types of colony.

It was in the hope of advancing the study variation further along the path indicated Baerthlein that the present writer described a p ticular kind of variant distinguished by three son what diverse characters—namely, irregularity of t edge and surface of the colony, agglutinability in s solution, and alteration in the agglutination serum. Though this group of characters wh constituted the variant called "rough" in *Bacil dysenteriæ*, *B. typhosus* and allied bacteria appears represent a fundamentally changed race, still t change is not always complete and the three charact may to some extent vary independently. This a applies to a fourth character—absence of patl genicity—which has since been determined in cert "rough" variants. The independent variability the characters is perhaps often not so much due the want of uniformity in the elementary factors a given variant as to the observed characters r being sufficiently elementary to correspond exac to the fundamental factors. Further observation a scrutiny tends to reveal the really essential ur which themselves are concerned in variation.

As an example of diverse variants which superficially alike may be mentioned the "medu head" colonies in *B. anthracis*, *B. subtilis*, strep coccus, and occasionally in *B. typhosus*. The appe ance of this form of colony is due to growth of bacteria in long chains or threads often without a other constantly associated change in the antige or other characters. Such colonies are probably part responsible, as has recently been remarked F. W. Andrewes, for the different observations regards virulence, &c., obtained with colonies wh appear alike. On account of the irregularity surface "medusa-head" colonies have sometimes b called "rough" and a resemblance in virulence, a genic properties, &c., to other "rough"-look colonies, which are essentially very different, expected unwarrantably. It is surely undesirable decry the quest for "laws" or "rules" in variat because apparent exceptions occur, considering complicated biological processes involved.

The promised publication by Commanders Dud and Parker on the toxigenicity of different col forms of *Corynebacterium diphtheriæ* will be welcon by other bacteriologists, especially if it is possible identify the forms which they have found with two well-known colony variants formerly descri by Cobbett and by Sclawyk and Manacatide, who not find any change in virulence in their variants with the "non-virulent" variant with a spe colony form recently obtained by M. Cowan Maitl from several virulent strains. In these researc the authors procured the variants pari passu w the more normal forms from virulent cultures.

is not quite clear whether the S and R forms, n Commanders Dudley and Parker found to be asted in toxigenicity, were from different sources ere both derived in each instance from a single n. In the former case the reasons for believing they were all *C. diphtheriæ* are required to lete the evidence. Definition of a species in ria is difficult as Commander Dudley admits, he assignment to *C. diphtheriæ* of a culture which ither toxigenic nor descended from a toxigenic n is a difficult and often unconvincing task.

e study of variation in bacteria is not yet very dvanced, but definite variation in antigenic ituents has already been described in several nces and found related to more obvious changes aracter. There is also good evidence that anti- composition may be closely connected with factor in the composite character known as nce. This is notably the case in the factors n have been studied both chemically and gically by Avery, Heidelberger, and others—e.g., e pneumococcus. It therefore seems probable even in so variable a group as the bacteria ble evidence of orderly variation will further mulate and prove to be of wide theoretical and ical value.

I am, Sir, yours faithfully,

JOSEPH A. ARKWRIGHT.

er Institute, S.W., August 7th, 1928.

E HEREDITARY AND CONSTITUTIONAL FACTOR IN ADDISON'S (PERNICIOUS) ANÆMIA.

To the Editor of THE LANCET.

S,—In your annotation last week on the tinal Bacteria in Pernicious Anæmia you state the evidence for an hereditary or constiutional nt in the disease is "rather nebulous." In a e published in THE LANCET five years ago I ht forward what I regarded as conclusive nce in favour of such an hereditary or constinal element. I believe this conception is of mental importance in the pathogenesis, prophyand treatment not only of Addison's anæmia), but also of the associated nervous disease—ute combined degeneration of the spinal cord D.). I should like once again to summarise idence on the subject, as many further observabearing on it have been made since the publicaf my lecture.

absence of hydrochloric acid from the gastric ion appears to be the one essential predisposing of the two allied diseases. It is most frequently o constitutional achylia gastrica, an inborn of secretion, which is strictly comparable with d's inborn errors of metabolism, such as cystina alkaptonuria, and pentosuria. The error is f function and not of structure, as the mucous rane is normal and has a normal number of ic cells. Achylia was present in 4 out of healthy students examined by Bennett and t Guy's Hopsital; it occurs in early childhood, often present in several members of a family. ez has observed more than 20 such families, of which a great-grandmother, her daughter, randchildren, and five out of 13 great-grandn had achylia. I have had under my own brother and sister and two sisters with digestive oms caused by achylia gastrica.

familial occurrence of achylia gastrica must explanation of the familial occurrence of A.A. has been recorded by many observers. I have ed no less than 62 family histories from the ure, and 7 out of a series of 25 cases at New Clinic (27 per cent.) had one or more relations ad died of the disease.

elt records the case of a mother and daughter f whom suffered from S.C.D., and of a father and son with the disease, the grandfather having died of A.A. Willson, in 1912, described the case of a woman with S.C.D., two of whose maternal aunts had died of A.A. I have set with a similar family history in 4 out of 16 private patients with the disease: the mother of one and the paternal grandfather of another died of A.A. The most remarkable case was that of a doctor who died of S.C.D. associated with achylia gastrica and A.A.; his brother, father, paternal uncle, and paternal grandfather had all died of A.A. The brother of another doctor with severe A.A. and slight S.C.D. was found to have S.C.D. and achylia, but perfectly normal blood.

Five patients, who have consulted me for various conditions associated with achlorhydria, had one or more relatives who had died of A.A. I have collected records of 28 other cases in which A.A. in one or more members of a family was associated with achylia in others. The brother of a doctor of 42, who consulted me for digestive symptoms due to achlorhydria, had died at the age of 41 after being ill for 18 months with S.C.D. and terminal severe anæmia, and Evans has described the case of a man with S.C.D. and achlorhydria but no anæmia who had a sister with achlorhydria. Dorst has described a family, different members of which had either A.A. or S.C.D., or achlorhydria without nervous symptoms or anæmia.

A woman of 50, who was feeling quite well except for occasional diarrhœa and eczema, sought my advice mainly because she had become worried about herself owing to the number of relations on both sides of her family who had died of Addison's anæmia. Her sister, paternal grandmother, and a cousin of her father's had died of it, a paternal cousin of her own had it now, and her mother died of it. Her tongue, which had been sore from time to time for three years, had the characteristic appearance of Hunterian glossitis. Her hæmoglobin percentage was 76 with 4,100,000 red corpuscles per c.mm., and the average size of the red corpuscles was increased from the normal of 7·23 μ to 8·34 μ, but the red cells were otherwise perfectly normal in appearance. She had complete achlorhydria.

In connexion with the bacteriology of Addison's anæmia I regret that you make no reference to the important observations of Knott on the subject, most of which have been published in the Guy's Hospital Reports, as the more recent investigations of Dr. Stanley Davidson, which form the basis of your annotation, do little more than confirm his pioneer work.—I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, August 6th, 1928.

INSTRUCTION IN PSYCHIATRY.

To the Editor of THE LANCET.

SIR,—Your review of Dr. H. J. Norman's book on Mental Disorders (July 21st, p. 125) will be approved by many of the older school of psychiatry. Yet it is disconcerting to find approval of a book, intended for students, on the ground that it does not deal with modern psychopathology. The most elementary knowledge of mental processes is withheld from our students. The metaphysical nature of the effort to correlate disordered conduct with disordered neurones, and its entire failure and practical futility in the psychoneuroses, are concealed from them. The mental attitude thus induced often persists throughout professional life in people of a certain temperament. Others make the discovery that something is wrong with their education or philosophy and feel helpless when faced with the many psychoneuroses of general practice, with only their traditional training in "neurones" to fall back upon. I am often asked by practitioners where they can learn about these matters, and where they can meet others of similar inclination to discuss their clinical difficulties and find out what is to be learnt from modern psychopathology. For this reason I ask the indulgence of your columns to notify that an effort is being made to form a small

society with these aims and I shall be pleased to hear from any would-be supporters.

I am, Sir, yours faithfully,

Harley-street, W., July 24th, 1928. ESTELLE COLE.

*** Dr. Cole raises a very important point, but our reviewer has not exactly approved the absence of teaching in psychopathology so much as conveyed the opinion that so important and difficult a subject should be properly taught or left alone. We have seen instructions in manuals of psychiatry which could have but little relation to the counsels which would be given by lectures to students out of first-hand experience.—ED. L.

CANCER AND THE BLOOD-GROUPS.

To the Editor of THE LANCET.

SIR,—In general practice there are occasions in which cancer appears to be a family disease, and on the other hand, some family strains appear to be immune. If not already dealt with and known, an investigation of the relative incidence of cancer in the different blood-groups might prove interesting.

I am, Sir, yours faithfully,

PENROSE WILLIAMS, F.R.C.S. Edin.

Cornwall, August 6th, 1928.

HOME PRODUCTION OF COCAINE.

To the Editor of THE LANCET.

SIR,—In an annotation entitled The Traffic in Narcotic Drugs, which appeared in your last issue (p. 236), you refer to the manufacture of cocaine in this country and state that hitherto there has been no production of cocaine from the leaves, or by refining crude cocaine, in Great Britain, adding that in 1927 a licence was granted to a firm of manufacturing chemists to carry on experiments in such manufacture. You will be interested to learn that cocaine was manufactured by us in 1903 at the Wellcome Chemical Works, Dartford. We were granted a Home Office licence in March, 1917, and have manufactured many thousands of ounces of cocaine at Dartford.

We are, Sir, yours faithfully,

BURROUGHS WELLCOME AND CO.

Snow-hill-buildings, London, E.C.,
August 8th, 1928.

SMOKE ABATEMENT INQUIRY AT BRADFORD.—Mr. F. O. Sandford, of the Ministry of Health, recently conducted an inquiry at Bradford into the application by various West Riding authorities for new by-laws on the smoke nuisance. The proposed by-laws provide that the emission of black smoke for two minutes in the aggregate within any continuous period of 30 minutes should constitute a nuisance. The authorities applying for the by-laws were Bradford, Huddersfield, Leeds, Halifax, Dewsbury, Batley, Spenborough, and Guiseley. In support of the application it was stated that the decision to apply for new by-laws arose out of a recommendation by a regional smoke abatement committee for the West Riding of Yorkshire, which represented something like 100 local authorities and a million people, and that committee approved of the terms of the suggested by-laws. In Bradford alone there were 438 industrial chimneys and 1330 furnaces. During the last seven years there had been 73 proved cases of smoke offences, and one firm had been prosecuted 70 times. The standard adopted in regard to smoke nuisance varied widely in the districts concerned. Amongst others evidence in support of the application was given by the medical officers of Bradford and Leeds. In opposition to the proposed by-laws by various trade associations and chambers of commerce it was stated that it had been proved by experience by firms with the most modern plant that it was impossible to comply with the terms of the by-laws. It could not be worked in practice, except by imposing a tremendous burden on industry. It was contended that the existing local Acts in Bradford were quite sufficient to deal with the problem.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

PROROGATION OF PARLIAMENT.

PARLIAMENT was prorogued on Friday, August 3rd, Tuesday, Nov. 6th. The Royal Assent was given by Commission to a large number of Acts passed during past session.

HEALTH ADMINISTRATION IN SCOTLAND.

On Tuesday, July 31st, the House of Commons went Committee of Supply on a vote of £2,037,515 for the sa and expenses of the Scottish Board of Health. Mr. J HOPE was in the chair.

Mr. W. ADAMSON said the subject he wished to rais the deterioration of the physical condition of the Sc people due to the inadequate provision that was being for them by the Scottish Board of Health. There w number of causes that were leading to the poverty-str conditions in which a large number of Scottish people themselves to-day, but the main cause was unemploy That problem was even more severe in Scotland than in England. Nearly one-third fewer miners were employed to-day than were at work in 1924. In many the unemployed persons had been out of work for a siderable time. In Glasgow the period of unemploy ranged from six months to six years. This problem bearing very heavily upon the local authorities in Scot and particularly upon the parish councils. He wish impress upon the Secretary for Scotland that the prov made in these estimates to deal with the problem of po and distress in Scotland were quite inadequate. In last estimates they had £260,000 in grants made to councils in respect of poor relief, but this year there wa a single penny. He appealed to the Secretary for Sco to examine this problem closely with a view to more done by the Scottish Board of Health to enable Scotla shoulder this grievous burden.

Dr. DRUMMOND SHIELS said that that was the last they would discuss the report as the report of the Sc Board of Health. In the valedictory foreword whic members of the Board had inserted in the report expressed the belief that the efficiency of the work department in future would not be inferior in any w that of the Board. Although Labour Members had str opposed the change that was to be made they sin wished that the high standard of efficiency associated the Board of Health would be maintained under th régime. He wished to know what was the position regard to the vacancy in the medical membership Board. It was known for a long while in advance th Leslie Mackenzie was going to resign. Could the Sec for Scotland now intimate who his successor would He sincerely hoped that when the appointment was it would be found that a member of the present sta been promoted to the position.

Milk-supply and Tuberculosis.

The question of the milk-supply and tuberculosis w said, dealt with in the report. Undoubtedly unde effective administration of Dr. Leighton a very great im ment had taken place in the milk-supply of Scotlan was much cleaner and better than it had ever been. had been a gratifying increase in the quantity of li graded milk, but it still amounted to little more t per cent. of the whole milk used in Scotland. The n clature of the grades was very misleading. There w doubt that Grade A in bulk, which was only the third qualities, was considered by many people to be th quality, while the tuberculin-tested milk had not proper position in the public mind because of confus Grade A milk with that of the highest quality. revision of that nomenclature ought to be made, so th public could understand properly what the position He would like to know if the Secretary for Scotlan satisfied with regard to pasteurised milk? If pasteur was carried out effectively this milk was safe, but there great liability for pasteurisation to be done ineffec and to be a danger rather than a help by misleading as to its safety. The report did not deal with the Was any definite standard laid down; if so, was it enforced; and had there been any cases where pasteuri which was becoming almost the most popular fo protecting milk, was regarded by the Department as wholly safe and to be trusted?

The report stated that last year 2240 animals, cows, were condemned as tuberculous, compared wit

926. The Board of Health considered that the increased ber was a sign of increased efficiency in the inspectorate, if that was so, he was glad, but it also showed that e was still a substantial amount of tuberculosis among le in Scotland. In view of the danger to young children, cially the poorest, it was well that effective steps should aken to deal with the matter. Even the Empire Market-Board were now publishing placards inviting people to more milk, but in view of the fact that the former entage of tuberculous milk was 8 per cent., he would state to recommend anyone with young children to use nary milk unless he was satisfied—which he was not—that percentage had been reduced almost to vanishing t. It would be a good thing if the right hon. gentleman d reassure the public mind as to the quality of the milk, iew of the propaganda that was being carried on for ased consumption. The report contained a chapter on real disease. What was the position of the department gard to that subject? The chapter in the report was very iously written, but it showed that the technical heads of department were not at all satisfied with the position. large sum of £60,000 or £70,000 was being spent in land alone in dealing with this disease, and something £600,000 throughout the Kingdom. Yet in Scotland percentage of defaulters was 51. That showed an alling waste of public money. The local authorities cotland were of opinion that the present arrangements not satisfactory or efficient.

Coöperation Between Hospitals.

he question of coöperation between hospitals was being carefully considered by many bodies, both in England Scotland. The voluntary hospital managers were very h concerned at the present position, and the question coöperation between the voluntary, municipal, and poor-hospitals was bound to arise in connexion with the posed local government changes. In Aberdeen there was arrangement that seemed to be very desirable. The sh councils there had handed their hospitals over to the lic Health Committee of the town council, and the whole e public health accommodation there was being adminis-d by one authority. In Glasgow, also, there was a king arrangement of a similar kind. Many of the poor-hospitals in Scotland were not well equipped or quately staffed, and the association, with the municipal ices, and with the staffs of the various voluntary hospitals, bound to improve their efficiency. He was glad that Department seemed inclined to encourage that. He ld like to ask if the Secretary for Scotland had any rmation to give in regard to Craigleith Hospital. The ction of that institution and Craiglockhart Hospital, nderstood, was being considered and, in view of the tage of beds in Edinburgh Infirmary, it would be as if some arrangement of that kind were made as soon possible. The report of the Mackenzie Committee ed that there was a shortage of 3600 beds in Scotland years ago, and the position was not any better to-day. the Minister consider that adequate arrangements now been made, or were likely to be made, to provide n early date a proper number of beds? The Scottish mittee of the British Hospitals Association had set five local committees for coördinating the various ital activities, and there was also a liaison committee een those bodies and the Department. Why were e no representatives of the municipalities on that on committee? This ought not to be a matter purely een the managers of voluntary hospitals and the artment; the municipal medical services ought to be esented in any working arrangement of this kind, use there was in these negotiations a danger of magni-g to too great an extent the importance of the voluntary ciple and to say that it must be preserved at all costs. first consideration must be the efficiency of the hospital ice and the supply of an adequate number of beds. le they acknowledged the important work which the ntary hospitals had done, they regarded the voluntary t as being the pioneer, and considered that when the ssity of the work was evident it should be done by the ic authority, so that adequate medical attention might iven to all classes of the community.

hat had happened to the report of the Departmental mittee on Maternal Mortality which was issued about nonths ago? How many of its recommendations had put into operation? There was no doubt that this ect must ultimately be dealt with by municipal maternity ices, and by ensuring coöperation between doctors midwives, and between the ante-natal services and other public health services. He could not now go the large question of the nutrition of school-children, he called attention to the fact that last year 6·4 per . of school-children in Scotland were in a state of ition below the average, while 1·5 per 1000 were in a state of very poor nutrition. Was the Board of Health urging local authorities to put into operation the whole of their powers for feeding necessitous children? With all the poverty and misfortune in Scotland there was money enough to feed the children. The same consideration applied to the questions of the dental treatment of school children and treatment of adenoids, tonsils, and so on. There was no doubt that many of these children were suffering in health because of defects which, if their parents were in a better position in society and had more money, would be remedied as a matter of course; but because the parents were unable to afford it, and because the school medical service was not big enough and had not sufficient resources, they were left to drift very often into a state of chronic ill-health.

Mr. MACQUISTEN attributed the poverty of some districts of Southern Scotland to Irish incursion.

Mr. JAMES STEWART drew attention to the alarming figures in the report with reference to tuberculosis, both case-rate and death-rate being on the ascendant, especially in the Highlands and Islands.

Mr. T. HENDERSON called attention to the inadequacy of the efforts to suppress venereal disease in Scotland.

Reply to the Debate.

Major ELLIOT (Under-Secretary of State for Scotland) in replying to the debate, said that the Board of Health were keeping an anxious watch on the health of Scotland to see if deterioration was taking place—that deterioration which indeed one would expect from the long-continued industrial depression. They had not yet any evidence to lead to the conclusion that deterioration was taking place. The reports of medical officers of health on the school population did not indicate any deterioration in the health of the children of Scotland generally. They had kept a watchful eye on the vital statistics of the country. It was true that last year the pulmonary tuberculosis figures were higher than those of the year before, but they were lower than they had been for any year up to that time, lower than in 1921, 1922, 1923, 1924, and 1925. Non-pulmonary tuberculosis continued to fall and was lower last year than ever before. They all agreed as to the tremendous struggle through which industrial Scotland was passing and the Government were not blind to the situation. They recognised the urgent necessity to deal with it by legislation which would be laid before the House before the end of the present year. Dr. Shiels had said that the percentage of underfed and badly-fed children was too high and he (Major Elliot) agreed with him. They must continue to do their utmost by improving the school medical services and by tightening up regulations to make sure that the Education Act was carried out and that every child got sufficient nourishment to enable it to take advantage of education. There was no divergence of opinion between the Secretary of State and his advisers on the question of venereal disease. The report made it quite clear that in the opinion of the Secretary of State the time had not come to ask the House for further compulsory powers until they were sure that the powers already entrusted to the local authorities by the Government had been utilised to the full.

Dr. SHIELS said that the point he wished to make was that there was a divergence of opinion between the Scottish Board of Health and the English Ministry of Health and not between the Secretary for Scotland and his advisers.

Major ELLIOT said he could assure the hon. gentleman that the Secretary for Scotland was in no way inclined to defer to the opinion of the English Minister. He considered the matter on its merits in consultation with his technical advisers and in accordance with their advice he came to the conclusion mentioned in the report. The Scottish Board of Health were not flinching from drastic action to make sure that the milk-supplies were as pure as could reasonably be managed. In reply to Dr. Shiels's question as to the medical member of the Board of Health, everyone knew that Sir Leslie Mackenzie had now retired, and it was right that Parliament should take note of that fact and remember, with gratitude, the great work that he had done for the health of the people of Scotland—(general cheers)—during the many years that he had been entrusted with that duty. The reason that a new medical member had not yet been appointed to take his place was simply that the Bill for the Reorganisation of Offices in Scotland had not yet received the Royal Assent. As soon as that Bill became an Act of Parliament the Secretary for Scotland would proceed with the utmost expedition to make the new appointment. He had nothing further to report for the moment in regard to hospitals, but the proposals that Dr. Shiels had brought forward would be considered. He was not able to say that the shortage of hospital beds had been remedied, but an improvement was being effected almost monthly, with the provision of increased

hospital accommodation for the sick people of Scotland. Only a few weeks ago he had opened the new Northern Infirmary at Inverness where considerably increased medical facilities had been made available for the people in the northern districts. With regard to the report of the Departmental Committee on Maternal Mortality, the Board had done their utmost to bring up to date the system in Scotland in regard to the services for pregnant women. The Maternity Homes Act ensured that there was now a service available for 100 per cent. of the mothers of Scotland, a thing that could be said of very few other countries in the world. The Board had not succeeded in reducing the very high percentage of deaths from puerperal fever, but they were considering fresh steps for dealing with that matter. The service had been made available, however, and they would do their utmost, by administrative action, to secure that further institutional accommodation was made available for women in childbirth. In regard to tuberculosis there were fluctuations from year to year, but what they had to observe was the general trend of the figures and that gave them no reason to despair or to feel that any serious inroads were being made on the health of the people of Scotland. As regarded tuberculosis in the Island of Lewis they had done their utmost to deal with that matter. Sanatoria had been opened and there were three whole-time men and three medical officers of health and assistants working part time on that problem. It might be that they were dealing there with a hereditary resistance which was lower than the resistance on the mainland, or in those parts of the country which had been longer exposed to the infection of the disease. They were, however, at present engaged in investigations to see whether that was the case or not. The nine years during which the Scottish Board of Health had presided over public health matters in Scotland had been years of varying fortunes, but as regarded health, housing, and social conditions they showed a distinct improvement. If they could make as much progress in the next nine years he would be satisfied.

Mr. JOHNSTON asked if the Under-Secretary could make some statement with reference to the practice carried on for some considerable time by one firm of importing inedible grease by the shipload from abroad and selling it to poor people as edible lard?

Major ELLIOT said that the Government took a serious and grave view of this matter. They felt that a definite offence had been going on. The local authorities upon whom the onus of prosecution fell had now the matter under consideration. The Government would not stand in the way of steps being taken, if they desired to take steps. The stock now under embargo in Glasgow would be dealt with as the order of the Court decided.

The vote was agreed to.

MINISTRY OF HEALTH VOTE.

On Wednesday, August 1st, the House considered the Report of a vote of £13,774,025 for the salaries and expenses of the Ministry of Health.

Mr. LANSBURY protested against the reduction which he said the Minister of Health was making in the grants for milk distribution, housing, and slum clearance, and poor-law relief.

Lieut.-Colonel FREMANTLE said that there had been presented to Parliament in the last two days a report from the Departmental Committee on Vaccination, which could not be taken into account so late in the session, but which must be referred to. Having enumerated the circumstances which led to the appointment of the Committee—certain objections to the practice of vaccination and certain doubts with regard to the necessity of its continuation on the present lines owing to the milder type of small-pox—he called attention to the danger represented by the large number of unvaccinated people which was increasing every year in proportion to the whole population, a circumstance which had an international aspect, because other countries held that vaccination was a very small price to pay for protection from a very alarming disease. Therefore action was required to be taken, and in the first instance a scientific committee was appointed to inquire into the nature of vaccination and into the various conditions which appertained to the operation of vaccination. That committee had presented a lengthy report which, from a scientific point of view, did great credit to its authors, and left the legislators very much in the same position as they were in originally from a practical point of view, for it showed that the position required further investigation on scientific lines.

Vaccination and Nervous Disorder.

There was one point which the report raised—it had been made a serious problem in the Press as well as in the House of Commons—and that was the occurrence in the period after vaccination of certain unfortu cases of nervous disorder which had been stated some hastily, and by others anxiously, as being poss due to the operation of vaccination. This report c with those cases very thoroughly. They had to t these exceptions in their proper light and proport and the report showed that they were a small nun compared with the total number of vaccinations. total number of cases with which the Committee c was 62, of which, unfortunately, a considerable nur were fatal. They must recognise the seriousness of t facts; but when they were dealing with 314,000 prin vaccinations in one year 62 in all was a small number they must not exaggerate its significance. The t number of deaths from vaccinia over a period of years had only been 0·001 per 100 vaccinations. Still, t were facts which have to be faced and they who were keen supporters of vaccination as essential to the commu would be misleading the House if they did not face th The report showed first of all that it was a curious t that in the year 1924 the Committee could trace no c whatever, although they searched most diligently thr all the records of the results of vaccination, and t records were very complete. The Committee found s of these cases in 1922 and 1923. They found a close ass tion between these cases and the epidemics of disease kn as encephalitis lethargica and poliomyelitis. The clusion that the Committee came to was that just as chil suffering from scarlet fever, measles, and other ordi ailments were more susceptible in a time of outbrea poliomyelitis, so similarly those who had been vaccin were liable to be attacked by these passing diseases time of epidemic. The Committee pointed out exa the limits within which further observation was requ the points to which their sense of anxiety must be dire and the directions in which in future they hoped to be ab find out exactly the nature of the trouble which had ca this symptom, which was entirely accidental both graphically—for it had occurred in Holland as well a this country—and in years, and they might hope that would not see them occur again.

The speaker looked forward to the improvemen vaccination administration that would follow its t ference to the sanitary authorities, and deplored the con of those who, in defiance of the facts, tried to terr people on lines which every man who was sensible beli were scandalous exaggeration and malicious inventio

Ministry of Health Estimates.

He would like to look shortly at the total estimat the Ministry of Health. The total estimate for this was £20,000,000, showing an increase of nearly £1,00 on last year, for excellent reasons. Of the £20,00 over half was due to housing, so that the public h side was under £10,000,000. The prevention of di which was preventable had resulted, and was resultin an enormous improvement in the health and effici of the people as well as in their general habits. But estimates for the Defence Forces amounted to £114,000 The real moral of the contrast between that large sum the £10,000,000 spent on the prevention and cure of di was that when there was a clear case made out for expenditure for the Ministry of Health there should l question raised about it. If they could get general a ment on this on very side of the House he would su to those who, like himself, were keen on the preventi disease and on improving the lot of suffering huma that they should be very careful what they supported careful to avoid waste. There had been cases again again where extra money has been asked really as an dole and not for the prevention of disease. They de further provision to be made for the clearance of the sl They must focus attention in the provision of housin the very poor, and in order to do that it would be the of the State before long to remove the subsidy fro upper grades of houses, because the people who liv those houses could look after themselves now.

Housing and Health Services.

Mr. HARRIS said the money which had been spe housing and health services was most important, a was more impressive when they remembered the imn improvement in public health during the last 15 or 20 y largely due to schemes undertaken for that purpose. various schemes which were initiated by the Govern before the war had borne excellent fruit, and had justifie expenditure. In some boroughs, even in very cro areas, the system of maternity and child welfare had l remarkable effect on the death-rate. For instanc Bethnal Green, the poorest neighbourhood in the wh London, and the most overcrowded, they had reduce infantile mortality to 57·7 per 1000. In that respect

been able to take the prize for the best result in London. t figure compared with 59 per 1000 for London as a ole, and 69 per 1000 for England and Wales, including rural and well-to-do districts. Their infant death- had shown a steady decline. In 1916 it was 106 per 0. In 1918 129 per 1000. It then came down to 90 922, next to 71, and this year it was 57. That reflected y great credit on the medical officer and the loyal servants worked with him. It was not unreasonable to say t this improvement was largely due to the distribution free milk. There had never been a better expenditure public money than the giving away of milk through the lth departments of the local authorities. In Bethnal en milk was given to expectant mothers three months re confinement, to nursing mothers, and to children to 3 years. One pint per day was given, and that was enough to demoralise any woman or any child. Except children between 3 months and 18 months no larger ntity was given; it was then at the maximum of 1½ ts, and in that case a medical certificate was required. could not make out why the Minister of Health had led out this expenditure on milk for his special veto. now said that milk should not be given away to mothers their children who were in receipt of poor-law relief, ctly or indirectly. He required a special medical ification before even a pint of milk could be obtained. t was most unfortunate. It might be said why should these people buy the milk themselves? Unfortunately k was not a popular diet; and they had to do a great l of education in that direction. The Empire Marketing rd was spending thousands of pounds in putting up ters urging people to drink more milk. Not only was distribution of milk valuable from an educational nt of view, but it was most important at this very sensitive ge of a child's life.

Tuberculosis.

he complex problem of tuberculosis had racked the d of every Minister of Health and of every local authority. medical officer of health in Bethnal Green had given nt attention to the subject. In connexion with the th-rate from tuberculosis a very serious phase had been ated out to him. There had been a very heavy and rapid tality among patients who had died within a year of ification. In 1917 the percentage of patients dying hin a year of notification in Bethnal Green was 21·9, and 1922 the percentage was 26·9. They had taken the ble to follow up the cases. The reason for this alarming th-rate had been given to him by their very able medical er as due to the diffidence among patients in informing authorities that they were suffering from the disease. onference of local authorities in London had pointed he great success of the experiment at Papworth, where strial training was correlated with treatment. The ister of Health might well spend a little time inquiring that matter, and take steps to encourage those suffering the disease to notify the authorities earlier. All these th questions were, however, connected with the housing blem. One of the difficulties in dealing with tubercu- s was that when a man returned nearly cured, he had o back to a two- or three-roomed tenement, and share house with a family of five or six children. He was not g to underrate what the Ministry of Health or the local orities had done, but there was a little danger in the mism which said that most of the lee-way had now been e up. Whatever the Minister might do in the way of cing the subsidy on the more expensive houses, he t on no account consider for a moment reducing the idy on houses which were wanted to meet the real urgent need of the working classes.

aptain BOURNE said that there were on the registers of t authorities some 363,000 people suffering from tubercu- , and of that number some 63,000 were treated in any year in sanatoria. The average stay of a man in a sana- m was some 150 days, and the cost per patient was 3½*d.* per week. That meant that the total cost of toria treatment was between £4,000,000 and £5,000,000 annum. If it were certain that that sum would really t the cure of tuberculosis, he did not think anyone d grudge the money, but the Minister, when he was d if he had statistics to show how many of the people passed through sanatoria were cured had to admit he had no reliable information on that subject. There been in his constituency recently an effort to deal with of these cases by means of the tuberculin treatment. le that method had been reported upon unfavourably, d nevertheless been tried in some localities with very ficial results. The tuberculin treatment had one ntage. It did not require isolation in a sanatorium, a man who was undergoing it could go about his ordinary pation. It was a very much cheaper form of treatment sanatorium treatment, and although he spoke with diffidence as a layman, he felt that anything which might possibly be helpful to people suffering from this disease ought to be investigated by the Ministry.

Mr. BRIANT raised the question of the conditions in the hop districts. He said that having seen these conditions for himself, and having studied the reports of the medical officers dealing with them, he did not hesitate to say that in a large part of these areas the conditions were absolutely disgusting and unfit for any human being.

Colonel APPLIN asked if the Committee on Maternal Mortality had reported, and if so, what was the nature of the report? Were they going on in the same old way allowing mothers to die when their lives might be saved? When the Committee had reported would the Minister consider giving the same information to the poor women as was given by private doctors to those who were better off? As long as that information was withheld, they would have this great mortality among mothers, and go on rearing a generation of young people unfit to come into the world by reason of their mothers being unfit to bear them.

The Welsh Board of Health.

Mr. JOHN protested against the Minister's action in reorganising the Welsh Board of Health. Under the new scheme he said they were to have no Board of Health in Wales, but instead they were to have three officers in Cardiff carrying out the work of civil servants under the direct instructions of Whitehall, with no provision whatever for joint action under a duly appointed chairman.

Mr. LLOYD GEORGE said he very much regretted that it should have been necessary to raise this question at all in the House. He had hoped after the representations made to the Minister, not merely by his political opponents but by the whole of his political friends in Wales, that he would have made this concession to the unanimous wish of the Welsh people without distinction of party or creed. He urged the Minister of Health to reconsider this matter.

The Minister's Reply.

Mr. CHAMBERLAIN (Minister of Health) said the Welsh Board of Health had never been a board in the ordinary sense of the word, because a board in the ordinary sense was an executive body, and the Welsh Board of Health had never been an executive body since it was set up. The Welsh Board had never had the powers of the Scottish Board of Health. This was purely an administrative matter. As to the question of economy, when he decided for reasons which appeared to him sufficient and satisfactory, that he could not appoint any existing member of the Board to be chairman, he had to consider whether he should bring in somebody else. The work of the Board of Health had not been executive, and it had found so little to do that on the average it had met only three times a year during the last nine years. All its work had been done by its members in their individual capacity. It had been extremely efficiently done, and he had not heard any complaints about it. To bring in a chairman, who would really have no functions, at a cost of £1600 a year would be a course in which he would not be justified. It was not his desire to bring into publicity anything in the nature of a reflection upon any member of the staff in Wales. He thought it necessary, in receiving the deputation on the subject, to say something about it, and he thought that they would consider it as a private matter between themselves and himself, but since it had been made public he would say here was a case, not of any dishonourable action on the part of anybody, but of a series of petty personal squabbles that had taken place in the office. He had disciplined and censured those who had been guilty of subordinating the public interest to their own personal prejudices and feelings. The matter was settled, but to put one of those who had been concerned in these internal differences into a position in which he could or might affect the promotion of others with whom the differences had arisen, did not seem to him a step which he could possibly take in the interest of the administration of public health.

Poor-law Relief.

Dealing with the question of poor-law relief, Mr. Chamberlain said they had not found any cases of starvation. There were many cases of hardship, but if it was really to be laid down by the Labour Party that those who were unable to support themselves were to be supported by the State on the same scale as those in full work, he said that it could not possibly be done. Complaint had been made about the reduction of the grant for milk. He much regretted that it should be necessary to make any reduction, but they had to bear in mind that the practice of local authorities as regarded the amount of milk given varied enormously. Some gave nothing at all, and in other areas he expenditure was up as much as £20 per 1000 of the population. All authorities could not be equally right in

this matter. They had not laid down in a single case that this special form of assistance to nursing and expectant mothers was to be stopped. They had not forbidden any local authority to give milk or to give as much milk as it chose; all they had said was that they must limit the amount of the Exchequer grant, and the reduction was comparatively small. It was not a matter of policy on the part of the Ministry to reduce the amount of milk; if it had not been for economy he would not have done anything at all, but he would not like to admit that this economy was going to undo the work that had been done in the past in the preservation of infant life. What had happened was that having stated that the Exchequer grant in certain cases would have to be reduced, he had made certain suggestions which the local authorities could adopt if they desired to reduce their expenditure with the least possible disturbance to their existing practice.

Health Conditions in the Hop Fields; Sanatorium Treatment.

With regard to the hop fields the Ministry of Health had very little power beyond that of exhortation. What they needed in this matter was the education of public opinion. No doubt the conditions in the hop fields were very far from being what they should be, and he had done what he could to induce local authorities to adopt model by-laws, and to see that they were carried out. In the absence of further powers it was not possible for him to do more. Conditions were improving, though he agreed that there was much to be done. Captain Bourne had expressed some doubt as to whether they could be satisfied that the money spent on sanatorium treatment was justified by the results. They had not got figures from sanatoria all over the country which would show exactly what happened to people after they had been discharged, but some time ago they got from the Brompton Hospital Sanatorium particulars of between 3000 and 4000 patients who had been discharged. They showed in regard to the moderately advanced cases that after five years 57 per cent. of the males and 67 per cent. of the females were not only alive but apparently in good health; and that after ten years 38 per cent. of the males and nearly 50 per cent. of the females were also alive, and as far as he knew, in good health. That reassuring statement indicated that the money spent upon sanatoria was well spent; it prolonged the life of many people, and saved the lives of a good many others, and even where it was not able to do this, it did much to diminish the infection which otherwise might take place among the healthy population. In regard to housing, it was quite true that the progress made under the Rural Housing Act up to March, 1928, had been singularly disappointing, but in the three months since then progress had been very much faster. The number of dwellings in respect of which applications for assistance had been received, which was 1072 up to March, 1928, had increased to 1500 in the succeeding three months. In regard to housing in general, month after month not only the number of houses completed continued to go up, but also the number of houses under construction; and that number, which was only 48,000 last January, was to-day 59,000. He would be very much surprised if they did not get another 100,000 houses before the end of this year.

The vote was agreed to by 255 votes to 132.

THE LATE DR. HEYWOOD SMITH.—At the age of 90, Dr. Heywood Smith died at Chichester on July 25th. The son of Dr. Protheroe Smith, founder of the Hospital for Women, Soho-square, he was educated at Harrow and Christ Church, Oxford. His clinical training was obtained at St. George's Hospital, and on graduating in 1865 he held a house appointment there before taking up gynæcology as a specialty. He became M.R.C.P. Lond. in 1865, and proceeded to the M.D. degree at Oxford in 1870. Seven years later he published "Practical Gynæcology, a Handbook of the Diseases of Women," based on his experience on the staff of the British Lying-in Hospital and the Soho-square Hospital, to both of which he subsequently became senior physician. Other books and scientific writings followed, and Heywood Smith was one of the founders, and some years later president, of the British Gynæcological Society. On retirement from consultant practice in London he went to live at Hove, where he was living at the outbreak of the late war. Joining a veteran's corps, he was given medical charge of an air-raid station, and later did good work as civil medical officer to the Military Hospital at Chichester, where he finally established himself in retirement.

Dr. Heywood Smith, who was twice married, leaves a widow, two sons who are members of the medical profession, and a married daughter.

Medical News.

UNIVERSITY OF OXFORD.—At a congregation h on August 4th the degree of Bachelor of Medicine conferred on T. L. Davies and A. J. Leslie-Spinks.

UNIVERSITY OF CAMBRIDGE.—Applications invited for the Benn W. Levy Research Studentship, val at £100 a year. They should be sent to Sir Gowl Hopkins at the Biochemical Department before August 14

ROYAL COLLEGE OF SURGEONS OF ENGLAND. At a meeting of the Council held on July 31st, Sir Berke Moynihan, the President, in the chair, diplomas of M.R.C were conferred upon 158 candidates (130 men and women) who have passed the requisite examinations a have complied with the by-laws of the College. Th candidates are the same as those whose names were print on p. 259 of our last issue, except that Nellie Brown (We minster), David W. Currie (Leeds), Yatta Gimpelson (Ro Free and St. Mary's), Ralph H. Morley (Leeds), Bhava Natarajan (Bombay), H. G. Nimbalker (Bombay a Middlesex), Margaret E. Peaker (King's Coll.), Edith J. Smith (Royal Free), G. N. Unnithan (Madras and Un Coll.), and Elsie E. Wright (Royal Free and St. Mary received their diplomas of Member at a previous meeti of the Royal College of Surgeons, and Thelma Sheph (Royal Free) received her licence from the Royal Coll of Physicians on July 31st.

The Diploma of F.R.C.S. was conferred upon Herb John Seddon (St. Bart.'s), who has passed the requis examinations and has now attained the required age.

Licences in Dental Surgery were also conferred up A. M. Bennett and H. A. Lewis, both of the Royal Den Hospital.

Diploma in Tropical Medicine and Hygiene.—This diplo was conferred (jointly with the Royal College of Physicia upon the following 33 candidates who have passed requisite examinations:—

T. D. Amad, Maud C. Cairney, K. Cathiravelu, G. L. Chad S. S. Crosse, C. H. Devereux, J. P. M. Donnelly, N. Dotivala, Alice M. A. Downing, A. W. Duncan, H. A. Gill M. A. E. Gohar, I. S. Gupta, N. Gupta, M. Jafar, H. Johnson, H. Kaitz, Mary Keith-Thompson, J. N. Leit K. R. Lundeberg, L. J. McGregor, C. D. Newman, Annie Price, E. L. Robert, A. N. Sharma, G. Singh, J. D. S. Thom R. F. Tredre, M. K. Tucker, K. H. Uttley, Kathleen Vernon, P. L. Whig, and E. R. Wide.

ROYAL COLLEGES OF PHYSICIANS OF LOND AND SURGEONS OF ENGLAND.—As the result of the Fi Examination of the Conjoint Board held in July, following candidates were approved in the undermentio subjects, but are not eligible for diplomas:—

Medicine.—S. Alstead, Liverpool; S. Annaswami, Madras London; Nancy M. Badeley, Royal Free; S. W. Barl St. Bart.'s; F. E. Camps, Guy's; Rochelle Churin, Rc Free; C. F. Cosin, Guy's; W. W. Craner, London; T. Crichlow, King's Coll.; H. W. D. Crook, Guy's; S. Crowther, Cardiff; T. M. Davie, Middlesex; E. Edmondson, Cambridge and London; C. N. Evans, Bart.'s; N. B. Fadia, Bombay and Middlesex; T. Finey and T. Fritz, London; Ruth C. Galletly, Royal Fr H. Gordon, Durham; I. Gordon, St. Bart.'s; E. Hac Leipzig and London; F. F. Hellier, Cambridge and Lee S. K. Jatar, Bombay and London; D. T. Jones and W G. Jones, Guy's; S. Kin, King's Coll.; L. R. Lalw Bombay and London; Florence M. Lessing, Charing Cr A. L. Light, Leeds; E. R. R. Mellon, Guy's; E. C. Murr London; D. A. Nicoll, King's Coll.; J. R. O'Neill, Lee C. R. L'E. Orme, Cambridge and King's Coll.; E. R. Passe, Melbourne and London; P. H. L. Playfair, Cambri and King's Coll.; T. R. Plummer, Oxford and St. Georg H. D. Pyke, Bristol; T. G. Reah, Cambridge and Lond H. Richards, Guy's; V. C. Robinson, Cambridge and Bart.'s; S. A. Scorer and S. Shone, Guy's; H. Stark, Bart.'s; B. Stewart, Cambridge and Leeds; B. P. Calcutta; P. R. Thambugala, Calcutta and Middles Ercenwin A. Utting, St. Mary's; and Sybil O. Willia Royal Free.

Surgery.—Annie D. M. Adams, King's Coll.; A. G. Adr St. Mary's; H. H. Aitchison, Oxford and London; G. Allan, Univ. Coll.; S. W. K. Arundell, Middlesex; C. Bailey, Cambridge and St. George's; J. R. J. Beddard, Bart.'s; J. B. Blaikley, Guy's; R. M. Bolam, Cambri and Durham; B. J. Bouche, Guy's; J. J. Boulle, Lond A. M. Boyd, St. Bart.'s; G. H. Bradshaw, Cambridge St. Bart.'s; F. E. Camps, Guy's; C. E. Caudwell, W minster; M. A. Chamberlain, Manchester; F. Clif Cambridge and St. Thomas's; J. O. Clyde, Middlesex M. Cohen, Cape and Guy's; Elizabeth Cooper, Royal Fr Florence K. Costello, Charing Cross; J. F. Crabt Manchester; D. F. L. Croft, St. Bart.'s; H. W. D. Cr Guy's; S. H. Croot, Cambridge and Guy's; L. E. Dai St. Thomas's; T. M. Davie, Middlesex; C. C. Davis, U Coll.; C. J. M. Dawkins, Cambridge and Middlesex; D. L. Derry, St. Thomas's; P. C. C. de Silva, King's Co

R. Doyle, Liverpool; J. T. Dunkerley, St. Bart.'s; H. A. Eason, London; Dorothy E. Eglington, Royal Free; J. S. S. Fairley, Cambridge and Birmingham; W. R. Forrester Wood, Cambridge and St. Bart.'s; G. H. V. Froggatt, Sheffield; M. Gamboa, St. Bart.'s; Dorothea L. Gee, Royal Free; W. N. O. George, Univ. Coll.; R. Glanvill, Guy's; D. R. Griffith, St. Thomas's; C. C. Griffiths, Liverpool; Gwendoline E. Grove, St. Mary's; F. R. Gusterson, St. Thomas's; W. G. Harvey, St. Mary's; C. F. Howes, St. Thomas's; Esme I. Hyam, Univ. Coll.; P. G. S. Kennedy, London; R. W. Knowlton, Cambridge and Middlesex; L. W. A. Lankester, Cambridge and St. Thomas's; J. C. Lee, Cambridge and London; A. Levy, St. Thomas's; K. Lindberg, Middlesex; A. G. Lloyd, Durham; O. V. Lloyd-Davies, Middlesex; R. M. B. Lowis, St. Thomas's; T. K. S. Lyle, Cambridge and King's Coll.; R. G. Macbeth, Oxford and King's Coll.; A. L. McFarlane, King's Coll.; E. R. R. Mellon, Guy's; K. G. Milad, St. Mary's; W. B. Millar, Middlesex; V. L. Misso, King's Coll.; G. Morgan, St. Mary's; G. H. Morley, Middlesex; L. H. Mottet and T. Nallainathan, Univ. Coll.; G. Na Ranong, St. Thomas's; G. S. Nightingale, London; Edith G. Niven, Univ. Coll.; W. G. Oakley, Cambridge and St. Bart.'s; R. I. O'Farrell, Sheffield; E. Ogden, Univ. Coll.; A. J. Parer and Keren I. Parkes, King's Coll.; C. T. E. Parsons, St. Bart.'s; A. P. Petigura, Univ. Coll.; A. S. Philps and I. Preiskel, St. Bart.'s; S. R. C. Price, King's Coll.; F. S. C. Pritchard, Guy's; C. B. Prowse, Cambridge and St. Bart.'s; H. D. Pyke, Bristol; A. F. Quarmby, Birmingham; T. G. Reah, Cambridge and London; J. B. A. Reynolds, Cambridge and St. Bart.'s; R. A. C. Rice, St. Bart.'s; G. L. Robinson, Cambridge and London; Alice I. Roughton, Cambridge; E. L. Rubin, Liverpool; D. J. Sagor, Cape and London; C. J. Sanderson, St. Bart.'s; G. H. Sanderson, Cambridge and Univ. Coll.; R. V. Sanzgiri, Bombay and London; N. Schachnowitsch, Guy's; C. P. Scott, St. Thomas's; Mary Scouloudi, Univ. Coll.; J. E. Semple, Cambridge and St. Thomas's; W. H. H. Serasinghe, Middlesex; Mary E. Sharp, Univ. Coll.; S. Shone, Guy's; F. J. G. Slater, Cambridge and Durham; E. Somasekhar, Birmingham; A. Somerville, Sheffield; A. G. C. Taylor, St. Thomas's; J. M. Taylor, St. Bart.'s; L. Taylor, Sheffield; K. A. Thomas, Birmingham; Phyllis D. Towell, Royal Free; S. A. Underwood, St. Mary's; M. H. Wace, St. George's; R. G. L. Waller, Westminster; C. J. Waring, London; C. M. E. Warner, King's Coll.; J. Wasserzweig, London; Olive C. Watkin, Charing Cross; K. Watman, Middlesex; C. E. W. Wheaton, St. Thomas's; D. C. Williams, Cardiff; G. M. Willoughby, Middlesex; Winifred M. Wright, Royal Free; N. Yacoubian, Birmingham; and H. S. T. Young, Cambridge and St. Thomas's.

Midwifery.—Margaret Abernethy, Royal Free; D. A'Brook, Univ. Coll.; Annie D. M. Adams, King's Coll.; A. G. Adrain, St. Mary's; H. F. Apthorpe-Webb, Cambridge and St. Bart.'s; Lucy E. Arthur, Nancy M. Badeley, and Vera R. T. Baylis, Royal Free; R. C. Bennett, St. Bart.'s; W. L. M.Bigby and J. B. Blaikley, Guy's; A. D. D. Broughton, Cambridge and London; H. H. Brown, King's Coll.; M. K. Bryce, London; D. S. Chowdhary, Punjab; J. O. Clyde, Middlesex; G. C. Cochrane, London; S. C. S. Cooke, Middlesex; P. A. Cooper, Univ. Coll.; Florence K. Costello, Charing Cross; D. W. C. Cox, Guy's; T. V. Crichlow, King's Coll; D. F. L. Croft and J. R. Crumbie, St. Bart.'s; T. J. Davies, Cardiff; C. C. Davis, Univ. Coll.; A. C. Dawes, King's Coll.; J. Donovan, Leeds; R. Doyle, Liverpool; W. J. D'Rosario, Guy's; M. A. A. El Gammal, Cairo; C. N. Evans and A. D. Everett, St. Bart.'s; D. Ezekial, Charing Cross; J. S. S. Fairley, Cambridge and Birmingham; W. B. Fiddian-Green, St. Mary's; C. H. Forsyth, London; R. H. Francis, Cambridge and St. Bart.'s; G. H. V. Froggatt, Sheffield; M. Frohlich, Brussels and Middlesex; R. L. Frost, Guy's; Ruth C. Galletly, Royal Free; B. C. Ghose, Durham; A. Gilpin, King's Coll.; R. Glanvill, Guy's; G. H. A. Graetz, Cambridge and St. Bart.'s; F. W. H. Grenier, London; D. R. Griffith, St. Thomas's; Bryneilen Griffiths and Rosentyl Griffiths, Cardiff; F. R. Gusterson, St. Thomas's; E. J. Hamp, London; Amy F. Hankins, Punjab and Royal Free; C. K. Haskard, Adelaide and London; Dorothy C. Hay, King's Coll.; J. Hopton, St Bart.'s; R. G. S. Howe, Univ. Coll.; Mary A. Hughes, Charing Cross; C. H. Johnson, Guy's; H. C. Johnson, Minnesota; W. H. P. Jonas, Oxford and St. Thomas's; Mary E. H. Jones, Cardiff; R. A. Jones, Cardiff; J. S. Kapadia, Univ. Coll.; Mary L. R. Kennard, St. Mary's; P. G. S. Kennedy, London; S. Kin, King's Coll.; R. W. Knowlton, Cambridge and Middlesex; M. Kokia, Westminster; L. W. A. Lankester, Cambridge and St. Thomas's; A. Levy, St. Thomas's; A. R. F. Lotaief, Durham; W. D. Lovelock-Jones, Cardiff; J. N. McArthur, Univ. Coll.; A. L. McFarlane, King's Coll.; Hilda M. C. Macmahon Garry, Liverpool; J. K. Marshall, Oxford and Guy's; S. N. Mathur, Lucknow; R. A. Maynard, Cambridge and St. Thomas's; W. B. Millar, Middlesex; G. Morgan, St. Mary's; G. H. Morley, Middlesex; L. H. Mottet, Univ. Coll.; E. C. Murphy and J. E. Myers, London; Q. St. L. Myles, Oxford and St. Thomas's; T. Nallainathan, Univ. Coll.; R. A. Nash, Guy's; T. H. Negus, St. Thomas's; P. L. Nirula, Punjab; E. Ogden, Univ. Coll.; J. R. O'Neill, Leeds; L. G. M. Page, St. Bart.'s; Keren I. Parkes, King's Coll.; A. P. Petigura, Univ. Coll.; I. Preiskel, St. Bart.'s; S. R. C. Price, King's Coll.; D. L. Pugh, Univ. Coll.; A. F. Quarmby, Birmingham; B. Rait-Smith, St. Bart.'s; Florence Ram, Cambridge and Sheffield; H. Richards, Guy's; R. D. Robinson, St. Bart.'s; Elizabeth B. Robson, Liverpool; T. S. Rodgers, Westminster; Irene H. Rogers, King's Coll.; B. Rothery, Cambridge and St. George's; H. W. Round, Birmingham; A. S. D. Russell, St. Thomas's; D. J. Sagor, London; H. K. Said, Charing Cross; G. H. Sanderson, Cambridge and Univ. Coll.; R. V. Sanzgiri, Bombay and London; J. E. Schneider, St. Thomas's; J. E. Semple, Cambridge and St. Thomas's; Mary C. Seward and Mary E. Sharp, Univ. Coll.; D. B. Smallshaw, Guy's; A. R. Smith, St. Thomas's; E. Somasekhar, Birmingham; A. Somerville, Sheffield; H. L. Spitz, Leipzig and Middlesex; V. Srinivasan, Madras; E. T. W. Starkie and Mary S. Stuart, St. Mary's; B. P. Sur, Calcutta; I. Taylor, King's Coll.; C. D. Trimble, Birmingham; S. A. Underwood, St. Mary's; Bertha D. Upton-Jones, Royal Free; M. H. Wace, St. George's; R. Warnecke, J. Wasserzweig, and S. N. Wasti, London; Olive C. Watkin, Charing Cross; L. H. Wharton, Bristol; C. E. W. Wheaton, St. Thomas's; J. S. Whiting, Cambridge and St. Bart.'s; A. W. Williams, Cambridge and Westminster; L. V. Williams, St. Bart.'s; G. M. Willoughby, Middlesex; W. R. Winterton, Cambridge and Middlesex; F. G. Wood-Smith, Cambridge and St. Bart.'s; M. G. Woolff, St. Thomas's; N. Yacoubian, Birmingham; and H. M. Yardley and H. S. T. Young, Cambridge and St. Thomas's.

Pathology (New Regulations).—Doris Ascough, Manchester; J. R. J. Beddard, St. Bart.'s; H. J. W. Bergh, St. George's; C. E. Caudwell, Westminster; S. C. S. Cooke, Middlesex; E. F. Hunt, St. George's; H. G. McGregor, Guy's; A. H. Nelson, Charing Cross; T. B. Pitts, Guy's; and J. E. C. Sayers, St. Thomas's.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.—The Old Students' annual dinner is to be held on Monday, Oct. 1st, with Sir D'Arcy Power presiding.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—Honorary Fellowship of the College has been conferred on Dr. Hugh Hampton Young, clinical professor of urology in Johns Hopkins University, Baltimore.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The College will be closed for the summer vacation from Monday, August 13th, to Saturday, Sept. 15th, both days inclusive.

ST. MARY'S HOSPITAL ANNUAL DINNER.—The past and present students' annual dinner of St. Mary's Hospital will be held on Friday, Oct. 5th, at 7.30 P.M., at the Trocadero Restaurant, with Dr. E. G. Moon in the chair. The hon. secretary is Dr. A. Hope Gosse.

EXTENSION OF PAIGNTON HOSPITAL.—Sir Mortimer Singer has laid the foundation-stone of an extension of Paignton and District Hospital. The addition provides 20 more beds, a new private ward, a new out-patients' department, and an enlarged operating theatre.

BY a vote of 25 to 12 Bournemouth Borough Council decided on July 31st to sanction the use of unclaimed bodies at the Park Prewett Mental Hospital for anatomical examination at the University of Oxford. The request came from the Ministry of Health through the medical superintendent of the hospital.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL.—Princess Louise, Duchess of Argyll, recently laid the foundation-stone of a wing named after her. It will consist of five floors, the lowest being occupied by a large out-patient department. Each of the other floors will have a ward of 15 beds with operating theatre and the necessary adjuncts. The two upper floors will not be completed, in accordance with the policy of the institution, until the money is in hand. The total cost will be £52,000, of which £28,000 is now available. Princess Louise stated that there is a waiting-list of over 2000 cases needing operative treatment.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On August 13th begins a two weeks' course at the Infants Hospital, starting daily at 2 P.M. and consisting of lectures and demonstrations, together with special visits to other baby welfare centres. On August 27th the Queen Mary's Hospital will begin a two weeks' course in medicine, surgery, and the specialties. In the mornings there will be lectures and demonstrations, while in the afternoons there will be a choice of operations or medical, surgical, or special clinics, followed by a lecture after tea. Special courses in September have been provided as follows: Psychological medicine at Bethlem Royal Hospital; medicine, surgery, and specialties at Westminster Hospital; children at the Queen's Hospital; electrotherapy at the Royal Free Hospital; ophthalmology at the Royal Eye Hospital; orthopædics at the Royal National Orthopædic Hospital. In October the Fellowship will again arrange weekly clinical demonstrations in medicine, in surgery, and in ophthalmology, also a special series at the Wellcome Museum of Medical Science, and a series of lectures on gynæcology, children's diseases, and minor surgery. Detailed syllabuses and other information may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

A COURSE of study on Digestive Pathology will be held at the Hospital de la Santa Cruz at Barcelona from Oct. 5th to Dec. 10th under the direction of Prof. F. Gallart y Monés. Application for enrolment should be made to the Administración del Hospital de la Santa Cruz, Depositaría, Barcelona.

PRIVATE PATIENTS AT NORWICH.—Since the Private Patients' Department of the Norfolk and Norwich Hospital was opened in April last, 70 patients have been admitted, and recently not only has every bed been occupied, but there is already a small waiting-list. Payment of 30*s.* a year ensures treatment for a married man and his wife, with children under 16 whose income does not exceed £550 per annum; for a man and his wife, with no young children, whose income does not exceed £450, and for a single person with not more than £350 per annum.

CHRISTMAS MEDICAL TOUR ON THE CÔTE D'AZUR.—For the fifth year in succession a Voyage Médical International is being planned after Christmas to places of medical interest on the Mediterranean littoral. The rendezvous is Marseilles on Wednesday, Dec. 26th, to be followed by a day spent in visiting that port and another at Toulon. Then on successive days will be reached Hyères, St. Raphael, Cannes, Le Cannet, Grasse, Juan-les-Pins, Antibes, Nice, Menton, Monaco, Beaulieu, with opportunity for visiting the Roman citadel of La Turbie, the prehistoric grottoes of Grimaldi, the laboratory of Dr. Voronoff, the observatory of Nice, and other objects of scientific interest. Demonstrations and historical lectures will be given. For further information apply to the President of the Société Médicale du Littoral Méditerranéen, Dr. M. Faure, 24, rue Verdi, Nice, A.M., France.

THE LATE DR. C. H. NEWBY.—Dr. Charles Henry Newby, who died at his home in Ilfracombe on July 11th, was born at Ryde, Isle of Wight, in 1849, and was educated at the Merchant Taylors' School. After qualifying as M.R.C.S. in 1873 he held house appointments at St. Thomas's Hospital, and became surgical registrar there. As surgeon for the National Aid Society he was decorated with the Fourth Order of the Turkish Medjidie after the Turco-Serbian War of 1876. In 1880 he took the diploma of F.R.C.S. Eng. and in 1885 joined the expedition sent to Khartoum for the relief of General Gordon. For his part in this campaign he received the English war medal and the Khedival Star. In the following year he saw service in the Turco-Bulgarian War, gaining the Red Cross of Serbia and the Order of St. Save. Settling in practice at Southsea he became medical officer for out-patients at the Royal Portsmouth Hospital. On retirement to Ilfracombe in 1904 he associated himself with the work of the Tyrrell Cottage Hospital, and acted as its treasurer for many years. He leaves a widow and two daughters.

RATING OF LANCASHIRE HOSPITALS.—A conference to decide the basis of assessment for various buildings of a public character has been held at Manchester between the County Valuation Committee and the Rating Authorities and Assessment Committees of Lancashire. Seventeen assessment committees and 119 rating authorities were represented. It was decided that voluntary hospitals should be assessed, gross, at from 20*s.* to 30*s.* per bed, including the beds of the staff, with additions for facilities for outdoor and special treatment, and paying patients. Rate-maintained hospitals are to be assessed, gross, at from £2 to £4 per bed of patients and staff, likewise with additions for outdoor and special treatment. This scale is to be applied also to mental hospitals, sanatoriums, and similar institutions, with additions where they are justified on account of recreation and other purposes.

THE LATE DR. D. P. COOPER.—The death is reported from Surat, at the age of 93, of Dr. Dosabhoy Pestonji Cooper, a pioneer of Western medicine in the Bombay Presidency. Educated at the Grant Medical College, Bombay, where he graduated in 1863, he was two years later appointed medical officer to the Parekh Dispensary at Surat, where he settled in practice. He was first president of the Surat Medical Association founded in 1886 and in the following year was appointed Khan Bahadur for his public services. In 1899 he was awarded a certificate of merit for his work during the plague epidemic, and for a time he acted as civil surgeon for the city. For nearly 50 years, from 1867, he served the municipality as councillor and he was an honorary magistrate. Among other distinctions conferred upon Dr. Cooper was the Fellowship of the University of Bombay, and he was appointed honorary assistant surgeon to the Viceroy in 1885, receiving the Kaiser-i-Hind silver medal. He was a staunch and active Freemason for over half a century. Of his sons two are members of the medical profession.

KING GEORGE HOSPITAL.—In the recent speci distribution of the Wells legacies, King Edward's Hospi Fund for London set aside a grant of £10,000 towar the building fund of King George Hospital, subject conditions to be agreed. The Fund has been inform that steps will shortly be taken to invite the support of t charitable public for the establishment of the hospit The scheme, as submitted to the King's Fund, contemplat the provision of additional hospital accommodation the parts of Essex immediately to the East of Londo including the area for which such accommodation is pa ticularly needed owing to the development of post-w housing. The King's Fund proposes to summon a confe ence with a view to facilitating the execution of the schem

THE LATE DR. J. W. MELVILLE.—At the early a of 24 Dr. John Walter Melville died at Liverpool July 22nd after an operation for appendicitis. Educated the Barrow-in-Furness secondary school, and at the Unive sity of Liverpool, he qualified as a medical practitioner a as a dental surgeon in 1926, and graduated as M.B. in t following year. Last October he was appointed tutor dental surgery in the University of Leeds, but it w his intention to take up general surgical work, a he resigned this appointment in order to take up the po of resident house surgeon at the Royal Southern Hospit Liverpool, which he held at the time of his death. T funeral took place at Rampside, near Barrow, on July 25t

Medical Diary.

Information to be included in this column should reach in proper form on Tuesday, and cannot appear if it reach us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUAT MEDICAL ASSOCIATION, 1, Wimpole-street, London, W
Special two weeks Course in Infant's Diseases at the Infa Hospital, Vincent-square, Westminster.
MONDAY, August 13th.—2 to 3 P.M., Dr. W. E. Robinso Cases of Malnutrition and Intestinal Toxæmia. 3 3.45 P.M., Dr. Eric Pritchard: Lecture-Demonstratio Caloric Values. 4 to 5 P.M., Dr. Eric Pritchar Lecture, General Principles of Nutrition.
TUESDAY.—2 to 3.45 P.M., Dr. Eric Pritchard: Feedi Cases. 4 to 5 P.M., Dr. M. Maizels. Pathologi Demonstration. Cerebro-spinal Fluid.
WEDNESDAY.—2 to 3 P.M., Dr. W. E. Robinson: Cases Rickets and Scurvy. 3 to 3.45 P.M., Dr. Eric Pritchar Lecture-Demonstration. Modification of Cow's Mi 4 to 5 P.M., Dr. Elizabeth Karn: Lecture-Demonstr tion. Ultra-Violet Rays.
THURSDAY.—2 to 3.45 P.M., Dr. Eric Pritchard: Cases Tuberculosis. 4 to 5 P.M., Dr. W. E. Robinson: Lectu Respiratory Diseases in Infancy.
FRIDAY.—2 to 3 P.M., Dr. Eric Pritchard: Cases. 3 3.45 P.M., Dr. Eric Pritchard. Lecture-Demonstratio Diet of Children. 4 to 5 P.M., Mr. D. Levi: Lectu Pyloric Stenosis.
SATURDAY.—2 P.M., Visit to Home for Blind Babies, Chorl Wood; and to the Infants Hospital Convalesce Home, Burnham Beeches.
SUNDAY.—11 A.M., Visit to V.D. Centre, Thavies In Holborn-circus. Prophylactic Treatment of Syphilis Infants.

Appointments.

CAMPBELL, W. S. H., M.B., Ch.B. Edin., D.P.H., has be appointed Chief Medical Officer of Health to the Linds (Lincs.) County Council.
HOARE, E. F., M.D., Ch.B. Liverp., Coroner for East Susse in succession to the late Dr. W. A. Dow.
MACDONALD, A. D., M.B., Ch.B. Edin., Reader in Mate Medica and Therapeutics, University of Manchester.
SAUNDERS, J. C., M.B., B.Ch., D.P.H. N.U.I., Superintende Medical Officer of Health and Tuberculosis Officer Cork-le-Boro.
Certifying Surgeons under the Factory and Workshop Act BRAND, W. H. E., F.R.C.S. Edin. (Banchory, Kincardine and LEWIS, W. B. A., M.B., B.Ch. Camb. (Oswestry, Salop

Vacancies.

For further information refer to the advertisement columns.
Aberystwyth, Aberystwyth Infirmary and Cardiganshire Gene Hospital.—H.S. £200.
Ayr County Hospital.—Jun. H.S. At rate of £80.
Barry Accident and Surgical Hospital.—H.S. At rate of £200.

h, Royal United Hospital.—Asst. H.S. £100. Also H.S. and H.P. Each £120.
lford County Hospital.—H.S., also Asst. H.S. At rate of £175 and £130 respectively.
rmingham, General Hospital.—Med. Reg. and Res. M.O. £155.
ton, Townleys Hospital, Farnworth.—Second Asst. M.O. £225.
tle, Bootle Borough Hospital, Derby-road.—Sen. M.O. Also 2 Jun. M.O.'s. Each at rate of £150 and £125 respectively.
dford, Municipal General Hospital (St. Luke's).—H.P.'s and H.S.'s. Each at rate of £200.
terbury, Kent County Mental Hospital, Chartham.—Jun. 4th Asst. M.O. £300.
terbury, Kent and Canterbury Hospital.—Hon. Surg. to Ear, Nose and Throat Department. Also Third Res. M.O. At rate of £125.
diff, Prince of Wales' Hospital.—H.S. £100.
rmarthen, Joint Counties Mental Hospital.—Jun. Asst. M.O. £300.
adnought Hospital, Greenwich.—Surg. to Out-patients.
t London Hospital for Children and Dispensary for Women, Shadwell, E.—H.P. At rate of £125.
sgow, University of.—Gardiner Chair of Physiological Chemistry.
ston, Borough of.—M.O.H. and School M.O. £800.
ds, City of.—Asst. M.O.H. for Maternity and Child Welfare. £800.
ester, City Education Committee.—Asst. School M.O. £600.
idstone, Kent County Mental Hospital.—Med. Supt. £1000.
nchester Royal Infirmary.—Jun. H.S. At rate of £100. Also Hon. Asst. Radiologist and Electro-Therapeutist.
rket Drayton, Salop, Cheshire Joint Sanatorium.—Asst. M.O. £250.
wcastle-upon-Tyne, Wingrove-road, Westgate-road.—Res. M.O. £250.
ttingham Children's Hospital.—Res. H.P. At rate of £150.
ttingham City.—M.O.H. £1440.
ham Royal Infirmary.—H.S. At rate of £175.
mouth, Homœopathic and General Hospital.—H.S. At rate of £100.
ding, Royal Berkshire Hospital.—3rd H.S. £150.
therham, Rotherham Hospital.—H.P. £180.
al Northern Hospital, Holloway, N.—H.S. At rate of £70.
nsea General and Eye Hospital.—Hon. Phy. Also Sen. Res. O. £250.
t Bromwich, West Bromwich and District General Hospital.—Res. H.S., H.S., also Cas. H.S. Each at rate of £200.
tern Ophthalmic Hospital, 155, Marylebone-road, N.W.—Jun. Non-Res. H.S. At rate of £100.
t London Hospital, Hammersmith-road, W.—Non-Res. Cas. O. £5 5*s.* per week.
chester, Royal Hampshire County Hospital.—Hon. Physician.

Births, Marriages, and Deaths.

BIRTHS.

S.—On July 27th, at St. Quentin, Broadstairs, the wife of Dr. J. W. W. Jepps, of a son.
ELL.—On July 22nd at Wellesley Hospital, Toronto, to Frances, wife of Dr. Eric A. Linell—a daughter.
YD.—On August 1st, at 29, Bramham-gardens, S.W., to Olive, wife of W. Ernest Lloyd, M.D., M.R.C.P.—a son.

MARRIAGES.

GETT—SIMPSON.—On July 30th at St. Martin-in-the-Fields, London, William Ingledew Daggett, M.A., M.B. Camb., F.R.C.S. Eng., to Eileen Hilda, youngest daughter of Colonel and Mrs. Simpson, of Fowey, Cornwall.
IS—IRVINE.—On July 31st, at All Saints' Church, Panarth, Kingsley Wassell Lewis, M.B., B.S., M.R.C.S., L.R.C.P., to Florence Henrietta, third daughter of the late Henry O. Irvine, of Southerndown, and of Mrs. Irvine, of Salisbury-avenue, Panarth.
NNES—MASTERMAN.—On August 1st, at St. Giles's Church, Camberwell, the Rev. Angus Campbell Macinnes, to Florence Isabella Joy Masterman M.B., B.S. Lond.
TIN—GARFIT.—On July 31st, at Partney Church, Lincolnshire, Peter Henry Martin, B.M., B.Ch., M.R.C.P., to Phyllis Mary Garfit, third daughter of the late Bartholomew Claypon Garfit and of Mrs. Garfit, of Dalby Hall, Spilsby.
RO—LOWTHER BOUCH.—On August 2nd, at Ackworth Parish Church, James Gibson Munro, M.B., Ch.B., of Kimberley, Nottingham, to Lilias Anne, eldest daughter of J. Lowther Bouch, Rector of Ackworth.
LEFIELD—DEAN.—On July 28th, at Caerphilly, South Wales, Bernard Graham Scholefield, D.M., F.R.C.S., to Queenie, younger daughter of Mr. and Mrs. C. H. Dean, of Berwyn, Caerphilly, South Wales.

DEATHS.

.—On August 5th, at Langdale, Salisbury-avenue, Harpenden, William Burt, M.B., B.S. Lond., late of Finchley.
OLL.—On August 1st, at 3, Artillery-mansions, Woolwich, Louis Ely Reginald Carroll, M.R.C.S., L.R.C.P.
SCH.—On August 1st, George Frederick Hentsch, L.R.C.P., M.R.C.S.
H.—On August 1st, at Mosley House, Boothstown, James Marsh, M.B., C.M., late Medical Officer of Health, Atherton.

.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE RED CROSS IN TIME OF PEACE.

AFTER ten years of peace it is well to be reminded that this generation can never lose the scars of war; the work of the Red Cross emphasises facts which most of us find it easy to forget. The eighth report of the joint council of the Hospital of St. John of Jerusalem and the British Red Cross Society, which covers only nine months, shows that their excellent work for ex-Service men has continued actively. During this period 308 tuberculous officers were helped, bringing the total since 1914 to 17,798. As time goes by, applicants find it increasingly difficult to satisfy the Ministry of Pensions that their disability is due to war service, and the Red Cross gives the necessary assistance while a case is pending. Other officers have finished their course at a sanatorium, but need financial aid in securing specialties of diet while on home treatment. Others, again, are helped with travelling expenses to Switzerland or the Riviera. The hospital at Brighton was filled the whole time, and some of the patients were very seriously ill when admitted.

An important activity of the fund is the provision of materials and training in various handicrafts for pensioners who cannot train in the hospital workshops. Approximately 1000 men were helped in this way during the nine months. The industries taught are increasingly popular and the medical superintendents speak highly of the great benefit conferred. Ex-Service men in Ministry of Pensions' hospitals are sent Christmas presents of the value of 5*s.* each, and over 2000 of them were cheered in this way on Christmas Day, 1927. About 13,000 men were taken out for drives or rides, or transported to entertainments. Although a number of Ministry hospitals have been closed, the diminution in the number of men still under treatment is not very great; they are simply being concentrated in larger institutions. The Emergency Help Committee, founded to give temporary emergency relief to ex-Service men and their widows and dependents, has also continued active. Many men, handicapped by disability, have been rendered self-supporting. 18,353 new cases were assisted during 1927, but no fewer than 12,187 applications were refused on the ground that there was no definite end in view or that they were ineligible or undeserving. One activity of this committee is to provide motor attachments to invalid chairs, and already 357 heavily disabled pensioners have thus been enabled to travel about without fatigue. The Games and Comforts Fund made 238 grants for wireless and cinema apparatus, musical instruments, cigarettes, clothing, bagatelle and billiard tables, gramophones, and all kinds of outdoor and indoor games. The Spero Firewood Factory for tuberculous ex-soldiers had to be closed down, but was fortunately able to reopen as the result of a special grant. From the medical point of view the factory proved most successful. The experiment of Scio House—a comfortable, "homely" institution for ex-officers suffering from advanced tuberculosis—has proved an unqualified success.

No less important than this continuing war work are the activities of the Red Cross Home Service Ambulance Committee, whose vehicles carry a steadily increasing number of sufferers every year. Modern methods of diagnosis and treatment depend so much on immovable mechanical apparatus that the mobility of the sick is becoming really important. In 1920, each of 273 ambulances carried an average of 125·6 patients. In 1927 the average had increased to 267·7. First-aid boxes are being set up on main roads, and all over the country members of the Order and Society spend their week-ends and holidays on the roads, armed with splints, bandages, and dressings. Considering the fact that 138,774 accidents, involving death or injury, took place on the roads of the United Kingdom in 1926, the Council feels justified in appealing for more voluntary workers for this service. The mobile X ray service is being increasingly used and a second car has been equipped.

THE INTERNATIONAL HANDBOOK OF CHILD CARE AND PROTECTION.[1]

SINCE the first edition of this remarkable book appeared in 1924 200 pages have been added to its bulk and 3*s.* to its price. The somewhat inadequate "International Who's Who" has disappeared, its place being taken by a useful bibliography, and a much fuller index than heretofore enables the inquirer to find more easily the particular information he desires. Mr. Edward Fuller, who has carried out

[1] Third edition. Compiled from official sources by Edward Fuller. London: Longmans, Green and Co., Ltd., and the Weardale Press. 1928. Pp. 646. 10*s.* 6*d.*

the arduous task of compiling a record dealing with 300 countries or political units, excuses himself for inequalities of presentation, pointing out that the details are supplied in various forms and a dozen languages, that some replies are received two years after sending out the questions—though the Governor of Guadeloupe is the only one bold enough to state that his statistics are authoritative for five years—while there is no sort of agreement among English-speaking people as to what they mean by "child welfare." Many surprises are met with in turning over the pages of this volume; for instance, that child welfare work has been carried on in Afghanistan since 1910, that both infant vaccination and education are compulsory in the Bahamas but neither in Barbados, that abortion is legal in Russia, that no less than 2,300,000 children in Germany are cared for by public and private charity, and that the infant mortality-rate in the Republic of Cuba is only 31 per 1000, falling to 20 in the city of Havana. Mr. Fuller says that his purpose is to place his readers "in possession of information which is not available in any other single volume or in any one country (and in many instances not at all outside official documents not always published) leaving each reader to marshal the facts as he will and to make his own comparisons." The book is admirably suited to fulfil this aim.

NITRITES IN SEA-SICKNESS.

Dr. J. F. Pearcy and Dr. D. B. Hayden, of Chicago,[1] believe that sea-sickness is mostly, if not entirely, due to over-stimulation of the vestibule. In studying the effects of blood pressure on labyrinthine function, they found that sodium nitrite, by lowering the blood pressure, markedly diminished nystagmus and past-pointing after rotation. When Dr. Hayden found himself among 16 sea-sick people on an Atlantic boat he naturally tried sodium nitrite. Eight of them were left to suffer and remained ill for an average of two days, despite injections of epinephrine hydrochloride. The eight who took grs. 3–5 of sodium nitrite every two hours were all comfortably eating on deck in an average of four hours, and did not relapse. Dr. A. Sellheim,[2] of Leningrad, has treated 20 cases with a drop of a 1 per cent. solution of nitroglycerine in water or two drops of a ½ per cent. solution on the tongue. All the patients recovered. There seems to be scope for the trial of these methods, but vigorous reduction of blood pressure is not without its dangers, and the nitrites and nitroglycerine are drugs to be handled with considerable caution. If their effect should prove to be mainly psychological some milder vehicle for faith would be preferable.

A HANDY CARD-INDEX CLIP.

Messrs. Cooper, Dennison, and Walkden, Ltd. (7 and 9, St. Bride-street, London, E.C. 4), have sent us specimens of the "transparent" card hinge, invented by Dr. J. M. F. Whitby, to which attention has already been called in our columns. The device consists of two circular discs of transparent linen stitched together down the centre and having their opposing surfaces gummed. They are adapted for use in any card-index cabinet, as one record card can be quickly attached to another which has been filled up, thus making up a book of cards. The salient points about the hinges which are already in use by insurance practitioners and others are their cheapness, ease of manipulation, saving of labour, and readiness to hand. The price is 1*s.* per box of 100, 7*s.* 6*d.* per box of 1000, postage extra.

ANIMALS AND REASON.[3]

Dr. Warden, who is assistant professor of psychology in the Animal Laboratory, Columbia University, has written a brief account of how man throughout the ages has interpreted what he has been able to learn of animal life. The story of science in its larger meaning, he points out, is the story of an unceasing attempt on the part of man to understand his own place in the natural order of things, and he surveys accordingly the facts that have emerged and the opinions that have been expressed along the lines of comparative psychology indicating the rise of this branch of learning to an exact science. Noting that the space made available by the format of the series has only permitted the briefest attempt at an historical survey, his hope is that he may be able to place modern movements in proper historical perspective, and his object is attained. He deals with his subject under five headings, ancient animal lore, the Greek influence, the psychology of the Early and Middle Ages (the period covering the decline of the Roman Empire and the rise of Christianity which terminates with the sixteenth century), the period between the opening of that century and the establishment of Darwinian principles, and, finally, with t experimental methods which have brought comparati psychology to-day into an exact science. He regards Darw as the founder of modern psychology, inasmuch as when t doctrine of evolution had been generally accepted, "a measu of sanity in interpreting animal behaviour" became apparen but in a technical closing section—the longest—he sho where experimental methods have conducted the leade of the science. A very interesting little book.

[1] Jour. Amer. Med. Assoc., 1928, xl., 1193.
[2] Brit. Med. Jour., 1928, i., 244.
[3] Psyche Miniatures. An Outline of Comparative Psychology. By C. J. Warden, Ph.D. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1928. Pp. 147. 2*s.* 6*d.*

NEW PREPARATIONS

Citobaryum.—This preparation is manufactured by H. Napp, Ltd., 3 and 4, Clements Inn, Kingsway, London. Wi the large modern developments of X ray work, the diagnost meal has become a familiar technical process, while bariu sulphate is largely replacing bismuth carbonate as an aid f outlining the alimentary tract. The manufacturers ha put the preparation on the market, the insoluble sulpha for X ray diagnosis, in a palatable and convenient form, a it is supplied in packets of 150 g., this quantity being es mated as needed for one examination. Full directions f use are supplied and stress is laid upon the fact that t granular external character of the salt disappears if t directions are followed leaving a meal free from objectionab sedimentation.

Shadoform is a special preparation for the ready produ tion of a liquid barium meal issued by the British Dr Houses, Ltd., Graham-street, City-road, N. 1. Its advanta lie in the ease with which the meal can be prepared— requires merely to be mixed with water—in the t cream-like consistency of the meal and the compl absence of lumps or grit, in its palatability and opaci and in the remarkably long time the solid matter rema in suspension. Shadoform is issued in packages of fo sealed boxes, each of which contains the equivalent 4 oz. of chemically pure sulphate of barium.

SIR MORELL MACKENZIE'S BIRTHPLACE.

To the Editor of THE LANCET.

SIR,—Some of your readers interested in medical histo who happen to be in the neighbourhood of Leytonsto London, may like to glance at the house where Sir Mo Mackenzie was born in July, 1837. The old house, w the worn stone steps and the shop in front, is now emp and dilapidated, and if not shortly pulled down may painted by a new tenant out of knowledge. The ho stands at the corner of Browning-road, Leytonstone, wh is a small antiquated road turning off the main road, qu close to the "Green Man" Inn, which is advertised a stopping place by all the tramcars and buses. In all obituaries I have read no mention is made of the ex spot. The visitor will find a tablet let into the side of house about 20 ft. from the ground, which commemora the fact.

I am, Sir, yours faithfully,

London, August 7th, 1928. OBSERVER

ACTIVE TREATMENT AFTER ELECTRICAL TRAUMA.

ELECTRICAL injuries, perhaps more than any other, for conservative treatment as a general rule. The rea for this is the tendency of the affected tissues to necrosis hæmorrhage. Nevertheless, as Prof. S. Jellinek[1] has recen pointed out, active measures are called for by cert definite indications. Rupture of vessels may give trou in the third or fourth weeks, and however carefully ligatu are applied they are always liable to cut through the alte vascular wall. Cerebral œdema calls for lumbar puncti an operation which this authority recommends as a first- measure in all electrical accidents. Amputation and surg intervention, usually with the object of removing dama tissues, should be rigidly avoided except when there disturbance of the general health and its cause is undoubte the local lesion. Prof. Jellinek insists strenuously that ordinary rules of pathology frequently do not apply h and that hundreds of these operations are performed unne sarily. A fourth indication is the division of nerves by or metallic edges. Otherwise the more conservative treatment of electrical injury the better.

[1] Wien. klin. Woch., 1928, i., 766.

CLOSING OF WAR HOSPITALS.—Two of the gr Birmingham War Hospitals, Uffculme and Sovrento, closed last week, being no longer required for their orig purpose. From 1919 to 1923 Uffculme was devoted so to orthopædic and limb cases; since then it has been for general surgical and medical cases, and as a centre the supply and repair of artificial limbs. Sovrento, wh was used mainly for paraplegic cases, will now becon maternity home under the City Health Committee.

A Contribution
TO THE STUDY OF
CHOREA.
HE SYMPTOMS WHICH RESULT FROM INJURY OF THE CORPUS LUYSII.

BY J. PURDON MARTIN, M.D. BELF., M.R.C.P. LOND.,

TANT PHYSICIAN TO THE NATIONAL HOSPITAL FOR NERVOUS DISEASES, QUEEN-SQUARE; AND PHYSICIAN TO THE SEAMEN'S HOSPITAL, GREENWICH.

HE corpus Luysii, corpus subthalamicum or body uys, is an almond-shaped ganglion situated just w the optic thalamus (see Fig. 1); it lies immedi- internal to the fibres of the pyramidal tract as pass down from the internal capsule to the pes he cerebral peduncle. Medial to it is the red eus and that complicated space known as Forel's ; below it is the substantia nigra. Its greatest h measures about 1·2 cm. The fibres which r it come almost entirely from the lenticular eus, passing in considerable numbers across and nd the internal capsule; of its efferent fibres , as will be shown, descend into the mid-brain nd the substantia nigra, and a few cross under floor of the third ventricle to the corpus Luysii ie other side. The knowledge of its connexions ill very incomplete. Of its functions I think it r to say that there has hitherto been no knowledge, ough a few observers have drawn tentative lusions from isolated cases.

a paper read at the combined meeting of the rican Neurological Association and the Neuro- al Section of the Royal Society of Medicine, held ondon last July, a description was given of the wing case, in which the only lesion found post em to which the symptoms observed during life d be ascribed was a small hæmorrhage destroying practically limited to the body of Luys of the ide of the brain.

History of the Case.

he patient was admitted to the Seaman's Hospital r my care on Feb. 12th, 1927, and subsequently ferred to the National Hospital, Queen-square. was a man of large build, aged 62, formerly a an, and latterly employed as a night watchman oard ships in dock. He had had no previous ses, but at the time he came under observation very atheromatous arteries, his systolic blood ure was 190 mm. Hg, and he had a considerably ged heart; the Wassermann reaction in his blood positive.

cept for frequent headaches during the preceding months, he had been well until Feb. 8th. On that ing, about 8 o'clock, just after arriving home his night's work, he felt giddy, staggered, and a severe pain in the right side of his body. He own for a little, then felt better, had a meal and to bed as usual. When he woke up at 4 o'clock e afternoon he tried to take a cup of tea sitting bed, but his right hand "shook" so violently he spilled most of the tea and he could not bring up to his mouth. Even when his wife held the he could not drink normally, but, as his wife ibed it, "he slopped the tea into his mouth gulped it down." When he got up that evening to his ship his right arm was twitching and ging about widely, and "he was throwing his leg about," but, with some assistance from his he managed to walk. When his wife saw him , two hours later, the involuntary movements had become much worse, but in the morning he managed to walk home. His condition remained much the same for the next 36 hours, but on the evening of Feb. 10th he became very agitated and unreasonable, turned on his wife as he had never done before, and in such a way that she was afraid of his violence; his involuntary movements were then worse than ever. The next day he remained in the same angry and uncontrollable mood, and in the evening made his way down to the ship. On the fourth morning after the onset of his illness he fell in his house, and that day he was brought to hospital.

Condition on Admission.

When I first saw him, and until his death 15 days later, his condition was as follows. While he was awake his right arm and leg were unceasingly tossed about in a violent chorea. The movements occurred at all the joints of these limbs, but an unusually severe involvement of the shoulder and hip and elbow and knee gave them an amplitude not often seen in chorea. In form they presented every combination of flexion, extension, and rotation; they were quite irregular. They were free, quick movements, unhampered by any degree of spasticity. Their violence was such that the skin had been knocked off the knuckles and other parts of the affected hand, and also of the inner sides of both knees. The movements were continuous during the waking state, though they varied somewhat in intensity, being less when the patient was alone, and worse when he was called up to answer questions or perform test movements. With a great effort the patient could hold the right arm steady for about 20 seconds, every muscle of the limb being then taut in contraction. The right side of the head and face and the tongue were involved in the chorea, and to some degree the right side of the trunk. The patient usually lay with his head and eyes turned to the right, and he seemed to try to put the right hand under his head in order with his head to fasten it down on the bed and so restrain its movements. The movements of the face were less than was to be expected from the severity of the chorea in the limbs. In the early days of the illness articulation, though affected, was still distinct, but later it became greatly slurred. Swallowing was performed by spasmodic gulps. Breathing was always irregular, and was sometimes difficult owing to the irregular movements of the muscles of the throat, chest, and abdomen. All these abnormal movements ceased entirely during sleep. The patient's facial expression suggested great anxiety and restrained anger, and this seemed to be a true reflection of his mental state; during his stay in hospital he was at times irrational and uncontrollable, especially towards night; in the latter part he was at times disorientated, and often in a frenzy. Associated with the movements was a moderate degree of sweating, almost confined to the affected side; the patient while awake always looked hot, and the jactitated limbs felt warm and moist. The body temperature, as registered on the chart, remained steadily at 97° F. until a few hours before death. The temperatures of the two sides of the body were unfortunately not compared.

Neurological Examination.

Further neurological examination revealed few other abnormalities. Voluntary power was normal in all the limbs. There was no sensory loss to pin-prick or light touch; at the first examination, but not subsequently, there seemed to be a slight hyperæsthesia of the choreic arm. The sense of position was normal, and pointing tests, including the Bránáy tests, were accurately performed; pointing with the right hand was accompanied by choreic deviations of the moving limb, and the point indicated was touched by a finger, as it were, in flight. The appreciation of vibration was normal. The tendon-jerks were present in both arms and about equal on the two sides, those in the right arm being, if anything, less; the knee-jerk was definitely less on the affected (right) side than on the left; the ankle-jerks were approximately equal. The plantar

responses were both definitely flexor throughout the illness. The abdominal reflexes were not obtained. The optic discs were normal, the pupils were approximately equal, but neither was quite regular; both reacted to light, and as far as could be determined they reacted also to accommodation; the external ocular movements were full, but the eyes when at rest were usually deviated to the right. Except for the abnormal movements in the face, throat, and tongue, the functions of the remaining cranial nerves were normal.

The patient died on the twentieth day from the onset of the chorea. A post-mortem examination was performed by Dr. J. G. Greenfield 12 hours after death, and the brain was hardened for a week in 10 per cent. formol saline before being cut. Subsequent section showed a recent hæmorrhage destroying the body of Luys of the left side—i.e., of the opposite side of the body to the chorea; except for scattered hæmorrhagic points there was no other lesion in the brain.

The examination of serial microscopic sections showed that in its vertical extent and anteroposteriorly the injury corresponded closely with the limits of Luys's body, and in lateral extent it transgressed these limits only by one or two millimetres in each direction. A small dorsal fragment of the corpus Luysii remained. The red nucleus was not reached by the hæmorrhage at any level, and none of the known important fibre-tracts was interrupted.

The photograph which is shown here (Fig. 2) is that of a horizontal section of the brain, which passes on the left side through the lesion below its middle, and through the upper half of the red nucleus; the right half of the brain is cut appreciably lower (as is shown by the section of the optic tract), and only a small portion of the body of Luys of that side is seen. The actual area of destruction is seen surrounded by a zone of staining. Its length at this level was almost exactly 1 cm., and its breadth ½ cm., but at a higher level its breadth was slightly greater. A more detailed description of the pathological anatomy is given in the original paper.[1]

FIG. 1.

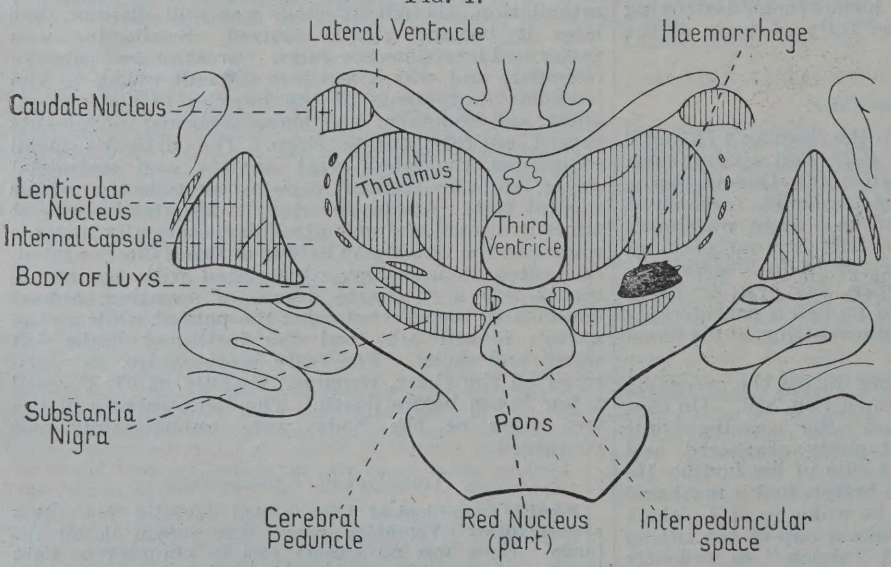
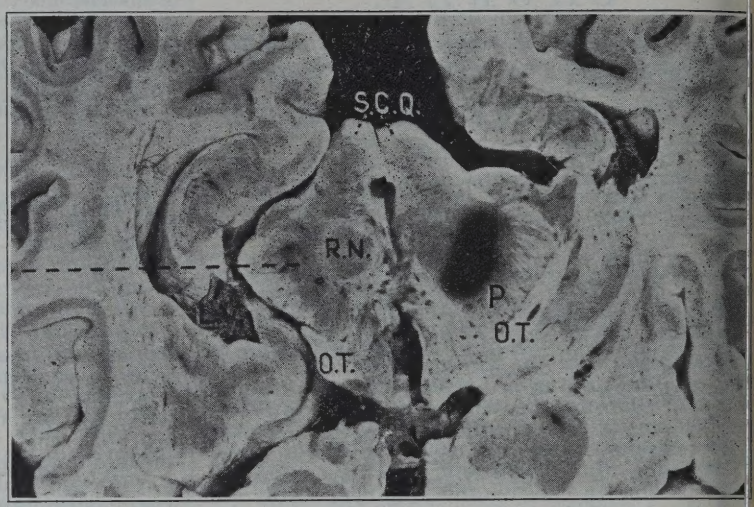


Diagram of a vertical transverse section of the brain to show the anatomical relations of the body of Luys and the extent of the hæmorrhage in the case described.

Similar Cases in the Literature.

It is impossible to assess the physiological significance of the findings in such a case except in conjunction with similar findings and with experimental work. There are in the literature of the last 50 years 12 cases, sufficiently described, in which localised lesions of the body of Luys have been found after death, and a number of other cases in which the body of Luys was involved in more extensive lesions. Closely comparable to the case described above are those of Fischer, Campora, Pette, Canfield and Putnam, Economo and Jakob, of which I give the following brief notes:—

FIG. 2.



Horizontal section of the brain passing through the lower half of the hæmorrha... The area of actual destruction is surrounded by a zone of staining. B.L. = b... of Luys; R.N. = red nucleus; S.C.Q. = superior corpora quadrigemina; P. = cerel... peduncle; O.T. = optic tract; and L.V. = left ventricle.

Fischer, 1911.—Fem... aged 72. Sudden onset ... left hemichorea with v... large movements; f... considerably affected. Arti... lation and swallowing ... turbed. No ment... disturbance. Death on ... fourth day.

At post-mortem exami... tion a hæmorrhage ... found destroying the ri... body of Luys "and c... this." There was a su... ficial cortical defect on ... orbital surfaces of b... frontal lobes.

Campora, 1922.—Fem... aged 70. Abrupt onset ... violent chorea in the ... side. Face involved; art... lation and swallowi... affected. Pronounced hy... tonia of affected side. S... psychic disturbance. De... after five weeks.

At post-mortem exam... tion a small hæmorrha... fissure was found in ... right subthalamic reg... 1 cm. in length, runn... transversely above the ... pedunculi. It destro... most of the corpus Luy... leaving only its most lateral part intact; medially ... extended into Forel's field and just touched the cap... of the red nucleus; the internal capsule was not involve...

Pette, 1922.—Female, aged 69. Carcinoma of the br... three years before. Sudden onset of chorea of the whol... the left side. Death four weeks later.

Post-mortem examination showed a carcinomat... deposit the size of a pea in the right regio-subthalamica;

y of Luys was mostly destroyed (private communication); nucleus, thalamus, corpus striatum, and cerebellar ıncles all intact.

anfield and Putnam, 1884.—Male, aged 59. Slight right ichorea for several weeks, then sudden exacerbation. ɜ little involved. Articulation affected. No sensory Knee-jerk and ankle-jerk normal on right, absent on The patient could walk without assistance. Death e weeks after the onset of severe chorea.

ɔst-mortem examination showed a hæmorrhagic softening size of a large pea " in the medial half of the left crus, ɔsite the posterior portion of the thalamus; it involved substantia nigra and the pes beneath to a depth of 6 mm., and the tegmentum above almost to the nucleus r. The only ganglionic matter involved besides the tantia nigra was the so-called ganglion of Luys."

Economo, 1910.—Male, aged 71. Sudden onset of ent chorea of the left side 24 hours after a slight stroke ing some weakness of this side. Articulation affected. nsient right hemi-amblyopia. Mental disturbance. th seven days after the onset of the chorea.

ɔst-mortem examination revealed a hæmorrhage the size cherry-stone lateral to the red nucleus, in the substantia a and in the tegmentum, involving the regio subthalamica the corpus Luysii, and extending ventrally into the pes.

ıkob, 1923.—Female, aged 75. Sudden onset of left ichorea with large movements. Conjugate deviation he eyes sometimes to right, sometimes to the left. lition remained unchanged for three weeks; then 24 ɔs before death the patient became comatose and the s of the left side were at rest and very flaccid. On the ɔ side some spasticity. Death from broncho-pneumonia ıov. 3rd, 1921.

ɔ post-mortem examination a recent hæmorrhage was , entirely destroying the body of Luys on the right side, strictly confined to this ganglion, pushing Forel's iles H 1 and H 2 upwards; it was sharply demarcated the internal capsule and the substantia nigra. Medially, tended beyond the bounds of Luys's body, but did not h the red nucleus. Many hæmorrhagic points in the l ganglia of both sides. Some small hæmorrhagic foci ıe left internal capsule.

ith these I think we may group the following , though its anatomical description is not quite ıise.

agnan,[2] 1870.—Male, aged 73. Sudden onset of right ichorea. Violent movements. Death after five days. ɔst mortem " a section made through the left cerebral ıncle at its insertion into the optic thalamus revealed a ɔrrhagic focus of the size of a small nut." This was the recent cerebral lesion.

ɔnfirmatory evidence of the results of injury to corpus Luysii is afforded by the remaining cases, hich there was more than one small lesion in the n, one of the foci in each case destroying Luys's y.

ich cases have been recorded by Greiff, Touché, Bianchi nd case), Bremme and Matzdorff.[3] In all of these the ical syndrome was the same as in the cases already ibed, with some complication corresponding to the r lesions. In Bremme's case the damage was caused secondary carcinomata, in Bianchi's by patches of losis, and in the other cases by hæmorrhage or throm- ɔ. Matzdorff's report requires special mention; it was rently in the press at the time at which the paper I have red to was read, and the author, citing seven of the s I have mentioned, described independently as " The rome of the corpus Luysii " the main elements of the ɔtom-complex put forward under a similar title in my r. But Matzdorff relates that his patient had been seen ıg life by Prof. Jakob, and the latter, who had had a ar case several years before, expressed the opinion arscheinlichkeitsdiagnose) that there was a lesion of the us Luysii of the opposite side of the body to the chorea. must surely be the first case in which such a diagnosis been correctly made, even tentatively, during life, and arks a stage in the knowledge of the subject. Patho- gally Matzdorff's case is important because the softening entirely confined within the limits of Luys's body.

f less physiological value than the foregoing, but worthy of mention, are cases in which the corpus sii was involved in a lesion which extended widely nd its borders. Such are Bianchi's first case erculoma), and the cases of hæmorrhage recorded ewandowsky and Stadelman, and by Lloyd and kelman; probably the case recently described by [4] falls also into this group. In all of these cases ame choreic syndrome was present during life.

To the experimenter the body of Luys is not easily accessible, and the only experiments actually involving it are those of d'Abundo.[5] He found that in kittens his lesions of the subthalamic region (including Luys's body) invariably produced a chorea of the opposite side of the body, and rotation of the head to the side of the chorea.

Fibres Descending from the Corpus Luysii.

It has been said that the efferent connexions of the corpus Luysii are very imperfectly known. In my case, blocks of cerebral tissue from above and below the site of injury were impregnated by the Marchi method, and these when cut showed a small but definite bundle of degenerated fibres beginning immediately caudal to the destroyed corpus and passing down the mid-brain (see Fig. 3). It lay immediately behind the substantia nigra, and soon

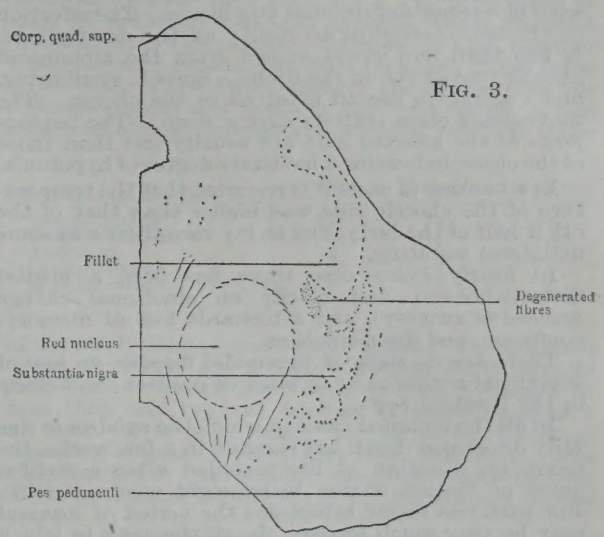


FIG. 3.

Outline drawing of a section through the upper part of the left half of the mid-brain to show the position of the degenerated fibres.

joined the medial margin of the medial fillet. It seems most probable that the fibres composing this bundle issue actually from the corpus Luysii, and it is consequently to be expected that a small lesion interrupting them would give rise to the same symptoms as an injury to the body of Luys itself. However that may be, there are in the literature of the last 50 years only two cases in which hemichorea was attributable to a focal lesion at a lower level than the corpus Luysii, and in both these cases the sites of damage, though widely divergent, were so situated that this bundle of fibres was interrupted. The first is a case by Bianchi in which the only damage in the left half of the brain (to account for a right hemichorea) was a patch of sclerosis which lay mainly in the middle third of the pes pedunculi and had spread backwards through the substantia nigra to involve the medial portion of the fillet. The second is a well-known case described by Bonhoeffer in which the main lesion was due to a carcinomatous mass at the decussation of the superior cerebellar peduncles, but to the left of this there was a small deposit interrupting the medial margin of the left fillet; the patient had had a right hemichorea. With the knowledge of the other cases now at our disposal it seems legitimate to ascribe the symptoms in this case to the latter lesion.

In animal experiments chorea of the opposite side of the body has been produced by Economo and Karplus[6] by lesions which interrupted, inter alia, the medial margin of the fillet, and by Lafora[7] by lesions directed towards the superior cerebellar peduncle, and therefore also interrupting these fibres. Chorea, as far as I have discovered, has not been obtained experimentally by any lesions other than those mentioned.

It is therefore in conformity with the clinical and experimental facts that interruption of the fibres which appear to descend from Luys's body gives rise to symptoms similar to those resulting from injury to the body itself. Unfortunately it has not been possible to follow the degenerated fibres to their termination, and their ending is unknown.

The Syndrome of Destruction of the Corpus Luysii or of its Descending Fibres.

A study of the foregoing cases in more detail than it is possible to give them here enables us provisionally to attribute a group of symptoms to the destruction of the corpus Luysii or interruption of its descending fibres, with the consequent release or disturbance of the function of other structures. The chief symptom is a violent chorea of the opposite side of the body, with unusual involvement of the shoulder and hip, and, therefore, with movements of unusual amplitude. The affection of the face, according to nearly all the descriptions, is less than one would expect from the amount of choreic movement in the limbs. Speech, swallowing, and respiration are all involved in the chorea. The movements cease entirely during sleep. The tendon-jerks of the affected side are usually less than those of the other, indicating a moderate degree of hypotonia.

In a number of cases it is recorded that the temperature of the choreic side was higher than that of the other half of the body, and in my case there was some unilateral sweating.

In nearly every case there has been a mental disturbance—at first chiefly an emotional change (excessive anxiety), and afterwards loss of memory, confusion, and disorientation.

There are no signs of pyramidal disease, no loss of superficial sensation or of sense of position, no defects in the pointing tests.

In all the recorded cases in which the syndrome was fully developed death has resulted in a few weeks, the naximum duration of life recorded after a sudden onset of violent chorea being eight weeks (Greiff). But with less severe symptoms the period of survival may be very much longer. In all the cases in which the mode of death can be ascertained, except Bonhoeffer's case in which death was due to erysipelas, the patients died of broncho-pneumonia. Touche's patient, who lived for a year after the onset of the chorea, had three attacks of broncho-pneumonia during that time. It is remarkable that none of the patients died of cerebral hæmorrhage or of cardiac failure. I think that the tendency to broncho-pneumonia is possibly to be correlated with the respiratory disturbances of the chorea and to be included as part of the fully expressed syndrome.

Remarks on the Pathogenesis of Chorea.

Since chorea commonly occurs in association with widespread inflammatory or degenerative changes in the brain, it has perhaps not been generally realised that it might result from a focal lesion. In this paper no reference is made to the inflammatory or degenerative choreas, but we must ask ourselves in what way focal lesions in the situations we have described can result in chorea. It is now generally conceded that chorea is a "release phenomenon," i.e. that it arises from the excessive or irregular activity of intact structures from which a controlling or guiding influence has been withdrawn. The cases that have been related do not indicate in what structures the impulses arise which originate the choreic movements, nor what structures must be intact in order that chorea may occur. Two factors indicate, however, that the impulses arise at a lower level than the body of Luys and that the controlling influence over them is normally exerted by the body of Luys itself. In the first place, we are dealing with a descending anatomical system of fibres; fibres arise in the lenticular nucleus and pass to the body of Luys, and another set of fibres arising in the body of Luys continues the path downwards to the mid-brain. Such a system must, by reason of its anatomical arrangement, exert its action downwards; in other words, the control which the destruction Luys's body apparently interrupts is a downwa directed control, and so the impulses over whic is normally exerted must be arising at a lower le Secondly, there is no valid evidence that fo injuries above the body of Luys result in cho Numerous animal experiments have been perform of which those of Kinnier Wilson [8] on the lentic nucleus and the recent series by Delmas-Marsalet [9] the caudate may be mentioned, and in no insta has chorea or any symptom comparable to cho resulted from a lesion of these structures. Of clin cases of pure chorea resulting from focal lesi nearly all the recorded instances have already b mentioned. It is true that there remain four—th of Vogt,[10] Conos,[11] Austregesilo and Gallotti,[12] Fragnito and Scarpini [13]—and that in all of these chorea has been attributed to a lesion in the caud or putamen. But it can be said without fear contradiction that as a basis of argument the three of these are valueless. The fourth is a m more important record, but is open to cer objections, and the authors, who express themse with great reserve on its merits, state definitely t they are unwilling to give any general applica to their findings. Consequently we must for present be guided by the experimental evidence assume that focal lesions of the caudate or lentic nucleus do not give rise to chorea. If chorea c not occur unless the lesion is as low in the sys as the corpus Luysii, and does occur when t structure is damaged, the control which norm prevents chorea must be exerted by the co Luysii itself. As long as that primary contro intact, chorea from a focal lesion does not seem occur.

Physiological Action of the Corpus Luysii.

Of the physiological action of the corpus Lu little can yet be said, except that it exerts a co over impulses arising in certain lower struct which are probably situated in the mid-brain. T is no unanimity as to the nature of the impu which cause chorea, and until we know their na we cannot deduce the normal function of the co Luysii from the symptoms liberated by its dest tion. The anatomical connexions of the co Luysii with the lenticular nucleus suggest that t is a higher control of its activities represente certain cells widespread in the striatum and pallid and it may be that by these nuclei the functio Luys's body is normally directed in relation other cerebral functions.

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A NOTTINGHAMSHIRE ORTHOPÆDIC HOSPITA

The Duke of Portland has given a large site at Harlow W near Mansfield, for the erection of an orthopædic hos Owing to legal difficulties a public Guarantee Compan been formed for its erection. Last year, in Nottin alone, there were more than 100 cripples for whom treat was not available.

A CLINICAL STUDY OF THE HUMAN AND BOVINE TYPES OF TUBERCULOSIS IN MAN.

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THE investigations out of which this paper developed e originally undertaken by Prof. J. M. Beattie, he University of Liverpool, to determine whether incidence of human and bovine tuberculosis was same in Liverpool as in other parts of the country. bacteriological work has all been carried out him from clinical material supplied from the Sanatoria, the Royal Liverpool Children's spital, the Liverpool Stanley Hospital, and private ctice. It is therefore fairly representative of all es of non-pulmonary tuberculosis and of various s and social strata. The correlation of the clinical ditions with the bacteriological findings brought many points of interest which are important so far as they contribute to a more accurate wledge of the disease. My conclusions should egarded as indications rather than demonstrations he truth. So far as they go, I think they are ified by ascertained facts, but larger numbers needed before generalisations can be made. necessity a certain amount of selection has crept The material is from consecutive cases, but e, as a rule, it is the more hopeful cases that reach operating-theatre the mortality results are of absolute value. On the other hand, a certain unt of comparison between different groups is missible.

ne hundred cases were investigated bacteriologi- y during the years 1923–24–25. One or two e been excluded as certainly not tuberculous. e patients cannot be traced, and so final con- ions cannot be drawn about them, although vious notes render them useful for certain istics.

Inoculation Failures.

considerable number of cases inoculated, ough clinically undoubted cases of tuberculosis, e no result in the test animals. Of these gative" results one should be eliminated, as the ent had a severe streptococcal infection and the nals died of streptococcal septicæmia. This es 31 cases, almost one-third, for inquiry. The erial used in these 31 cases was: in 66 per cent. caseous debris of softening glands or actual pus; 25 per cent. caseating bone foci; and peritoneal l and tuberculous granulation tissue in 4 per cent. a. As the proportions are practically identical he series of cases proved definitely bovine, it ns that the source of the material and its physical perties have no important bearing on its failure produce disease in animals. In other words, ough pus was used in a considerable percentage ases—and tuberculous pus is notoriously deficient tubercle bacilli—the negative results cannot be ibuted to this factor, as pus was used in just as y cases which gave positive results. So far as it s, this is an argument against the criticism that city of organisms in the material used was onsible for the absence of tuberculosis in the ratory animals.

may be said that such organisms as were ent were enfeebled by exposure to powerfully agonistic bodies in the serum of patients ly immunised against tuberculosis. If this so, the high state of immunity is not reflected the clinical progress of the patients. In those er consideration the recovery-rate (or proportion apparent cures) was only 73 per cent. None of 18 cases of undoubted bovine tuberculosis traced two years or over showed any signs of active ase—i.e., the recovery-rate was 100 per cent. I do not think that the effects of general immunity in the patient are of any great importance here. On the other hand, local conditions seem to have a bearing upon the results. It is conceivable that fibrosis, for instance, is inimical to the organisms in lesions in one part of the body, while in other parts the disease might even be progressive. The average duration of the lesion in the cases giving "no result" was 4·3 years (though several cases had apparently relatively short histories), while the "human" cases had lasted 2·3 years and the "bovines" only just over one year. That the results were not merely fortuitous is shown by the fact that repetition of the inoculations confirmed the original negative finding in several instances.

In case it should be pleaded that these patients were not tuberculous at all, those in whom any clinical doubt arose have been excluded. The proportion of cases of actinomycosis and syphilis which simulate tuberculosis is very small. No case giving a positive Wassermann reaction has been included. The table shows that, in the distribution of the disease over the different organs and systems, the "no result" cases represent almost exactly the average between those

—	Bovine.	Human.	No result.
Lymph glands	25	11	20
Bones and joints	5	13	7
Abdomen	2	0	2
Genito-urinary	1	1	0
Miscellaneous	1	1	1

of definitely human and bovine origin. The negative cases, therefore, are probably derived fairly equally from both types of infections, so that it cannot be said that one type of bacillus is more frequently at fault, or is more easily influenced by the local curative actions of the body, than the other. For this reason the "no result" cases have been ignored in the statistical inquiries into the human and bovine cases.

Regional Distribution.

The bovine bacillus is found to account for 75 per cent. of the cases of tuberculous glands in the neck. That is rather less than has been found in certain other districts, where the percentage has been placed as high as 90 per cent.[1] Inquiry into the age incidence may account for this apparent variation. Bovine infections were present in only about 28 per cent. of the bone cases. The figures relating to abdominal and genito-urinary cases—mainly because they are relatively seldom submitted to operation—are so small as to be valueless. In the main the figures are comparable to those for the country generally.

A study of the age factor throughout the whole series shows that 65 per cent. of the human infections were over 12 at the age of apparent onset, while 35 per cent. were 20 or over when symptoms first appeared. Among the bovine cases, on the other hand, only 15 per cent. were over 12 when attention was drawn to the disease. Of these 15 per cent., although the infection was bovine, three out of the five were not only over 12 but actually between 20 and 25 when evidence of tuberculosis was first obtained. While, roughly, 75 per cent. of all bone tuberculosis is due to the human bacillus, in patients over 15 the figure rises to 82 per cent., and in those under 15 about 70 per cent. is human in origin. This figure is one of great significance.

Of the cases of lymphatic gland infection in children 16 per cent. yielded the human type of organism and 84 per cent. the bovine. This more closely approximates to the 90 per cent. quoted above from the published results of work done entirely amongst children. Nevertheless, the fact remains that in Liverpool 16 per cent. of cases of glandular tuberculosis are due to human bacilli—i.e., infection from active cases of phthisis. In contrast to this 62 per cent.

[1] A. P. Mitchell: Infection of Children with Bovine Tubercle Bacillus, Brit. Med. Jour., 1914, i., 125.

of glandular disease in adults is due to the human tubercle bacillus. In fact, in adults about 72 per cent. of all surgical tuberculosis is the result of infection with the human organism. That implies that a very large proportion of cases of adult non-pulmonary tuberculosis have also a pulmonary focus—active or latent. This should increase the gravity of the prognosis in these cases, should make prolonged after-care imperative, and should be a warning against the indiscriminate use of general anæsthetics, which may aggravate pulmonary disease. An X ray of the chest should always be taken before operation on any adult with surgical tuberculosis.

Family History.

It was thought that a study of the family history would in many instances give a clue to the type of disease present—i.e., that a history of phthisis in a member of the older generation would be found in infections with the human bacillus, and that in bovine infections the older generation would be healthy, and other members of the same generation diseased. Here, however, great difficulties are encountered. There is a very widespread feeling that it is disgraceful to have a case of tuberculosis in the family. Unfortunately, the sense of disgrace does not lead to the general adoption of a more hygienic way of life, the use of non-tuberculous milk, and stricter measures to prevent the spread of infection, but only to concealing the shameful fact or to heaping up mounds of sand in which to bury the head, so that at least the horrid thing is out of sight. Infection of collateral members of the family is surprisingly seldom reported in bovine infections, though, of course, striking instances do occur. This is another indication that the soil is at least as important as the seed in the development of tuberculosis. In human cases, on the contrary, a bad or decidedly suspicious history of pulmonary disease was found in 31 per cent. Over and over again one can elicit nothing more than "grandmother always had a cough and mother died of pneumonia."

Apart from a study of the family history, attempts at determining the portal of entry were singularly unsuccessful. It was definitely recorded that, among the bovine cases, two apparently originated in glands draining the area in which an open wound had existed a short time before. In bovine cases the milk naturally falls under special suspicion. In four cases, one of which was in a well-to-do intelligent family, it was stated that the milk had always been boiled. This, of course, proves nothing, for such matters are often left to maids, who may be untrustworthy. Moreover, other articles of diet, such as butter and cream, may be carriers of the bacillus. The tonsils were diseased and the teeth carious in many patients with cervical glandular disease, but in several others they were not obviously at fault. Little weight, unfortunately, can be attached to this observation as, apart from the possibility of tuberculous infection passing through a tonsil without leaving indisputable evidence behind, it has been definitely shown that naked-eye examination is no criterion as to the presence or absence of actual tuberculous disease in a tonsil.[1]

Results of Treatment.

The results of treatment are strikingly different in the different groups. For instance, as already stated, all the 18 bovine cases traced were found in good health, and their lesions quiescent, while no less than 18·75 per cent. of the human cases were dead within three years; 68·75 per cent. were cured or apparently cured. I do not think this necessarily means that the bovine infections are harmless, while the human are deadly. Apart from the long period of illness, the expense of treatment, and the permanent crippling often caused by bovine infections, many patients die in the early years of life from meningeal, pulmonary, and abdominal tuberculosis, and are never seen by the surgeon.[2] The course of the two infections is apparently very different. Those to the bovine organism begin, as a rule, early in l though not necessarily in the very earliest ye and may lead to a comparatively acute and viru process. Should this not prove fatal, the mani tations of the disease become more and more chr until after early adult life it practically disappe Many believe that the human infection is contra early—i.e., within the first four years of life—that thereafter, if not rapidly fatal, it lies lat perhaps for many years. Be that as it may, "surgical cases" the disease is one that tends attack those of maturer years (65 per cent. o 12 at the time of apparent onset) and, unlike bovine type, it never disappears, and all ages liable to suffer. It may become very chronic, the immunity established evidently falls far sh of that produced by the bovine organism, as is sh by the very considerable mortality in the hur variety.

[1] Dr. Louis Cobbett's evidence, Report of Royal Commission on Tuberculosis, 1907.

SOURCES OF INFECTION IN NON-PULMONARY TUBERCULOSIS.

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For the past seven years I have noted, from reports of our sanitary inspectors on cases of n pulmonary tuberculosis, whether there was a hist of exposure of the patient to a pulmonary occurring in the patient's family. In all these pati there is a considerable presumption that the infec was of human origin. The total number of c so examined is now 4469, and these are presente Table I., separated according to the anatomical site the usual classification. The numbers are sufficie large to have some statistical validity.

TABLE I.

City of Liverpool.—Cases of non-pulmonary tuberculos 1921–27, divided into Group A—those with *no* histor exposure, and Group B—those with a history of exposur open cases of tuberculosis occurring within the family of patient.

Site of disease.	A.—No exposure.	B.—Exposure.	Proportion of total expressed per cent.		Difference of percentage.*	Pr a err dif e (1 ce
			A.	B.		
Bones and joints ..	974	89	24·3	19·3	−5·0	±
Abdominal	859	116	21·4	25·1	+3·7	±
Peripheral glands ..	1277	156	31·9	33·8	+1·9	±
Meninges and brain	418	61	10·4	13·2	+2·8	±
Skin..	124	15	3·1	3·2	+0·1	±
Urinogenital ..	92	3	2·3	0·7	−1·6	±
Other, or ill-defined	264	21	6·5	4·6	−1·9	±
Total	4008	461	99·9	99·9	—	

* This column gives the excess (or defect) of the percenta cases occurring in Group B over the percentage of cases occu in Group A.

The significance of these figures lies in the last columns, which give (1) the excess or deficienc the percentage of cases having a history of exposu infection in comparison with the percentage of c having no such history, and (2) the probable erro this difference in percentage. The usual criterio the significance of a difference of two rates is tha should be three or more times its probable e With this proviso the following deductions may made from the table. In Liverpool—

1. Tuberculosis of the bones and joints is significa more frequent in those having no history of exposur a human source of infection.

2. Tuberculosis of meninges and abdominal tubercu are significantly more frequent in those having a his of exposure.

3. Tuberculosis of peripheral glands is significantly in cess in those known to be exposed to human infection, but e significance is not so high as in 1 and 2.
4. The other groups either lack precision or are not merous enough to be significant.

The deductions from these figures indicate that berculosis of bones and joints is more often of vine origin than meningeal, abdominal, or, with less rtainty, peripheral glandular tuberculosis. This ference is somewhat contrary to the usual opinions hich are based largely on the work of Eastwood and riffith, and of Park and Krumwiede. Griffith has ven figures of cases bacteriologically investigated; ey indicate that 46·5 per cent. of cervical glandular ses, 41·3 per cent. of abdominal cases, and 18·3 per nt. of bone and joint cases occurring in children ere caused by bovine bacilli.

I give now a table (II.) of non-pulmonary cases of berculosis, slightly modified from figures given by r. A. S. Griffith at the National Milk Conference in ondon in 1922. I have computed the probable rors of the percentage.

TABLE II.*

—	Cases.	Bovine and per cent.	Probable error.
rvical glands	116	54 (46·5)	±3·12
ne and joint	476	87 (18·3)	±1·20
pus	126	64 (50·8)	±3·00
nito-urinary	17	3 (17·6)	±6·23
st-mortem material ..	159	39 (24·5)	±2·30
ningitis	12	2 (16·6)	±7·25
Total	906	249 (25·8)	±0·95

* These figures, unfortunately, do not give the abdominal ses.

Owing to their numerical insufficiency the figures of cteriological examination of material from cases of n-pulmonary tuberculosis are not beyond statistical iticism, despite the immense labour involved in taining them. Mr. E. D. Rudolf[1] performed this sk some years ago, and his results are given in able III.

TABLE III.

Age-period in years.	Total cases.	Bovine infections and per cent.	Maximum variation possible.
-5	47	14 (29·79)	18·87
-10	108	31 (28·71)	12·31
-16	62	7 (11·29)	11·37
-25	15	3 (20·0)	29·2
er 25	29	0 (0·0)	0·0
Total	261	55	—

It appears from these figures that the number of ses occurring in persons over 16 years of age is sufficient for comparison, and the figures in this spect are not a fair sample of the population. In

TABLE IV.

Cases of non-pulmonary tuberculosis among persons on cords of tuberculosis dispensaries in Liverpool, 1921–27.

Classification.	Adults and per cent.	Children and per cent.	Total.	Children. Per cent. of total at site.
nes and joints	277 (36·40)	469 (25·16)	746	72·6
dominal ..	83 (10·91)	471 (25·27)	554	85·0
ripheral glands	314 (41·26)	764 (40·99)	1078	70·9
her	87 (11·43)	160 (8·58)	247	64·8
Total	761 (100·00)	1864 (100·00)	2625	71·1

der, then, to make a useful comparison it is cessary to confine attention to children. The gures given in Table IV., from information provided by Dr. B. T. J. Glover, show the distribution into adults (over 15 years) and children, of 2625 cases on the records of the tuberculosis dispensaries in 1927, and are probably a fair sample of the whole.

The incidence upon adults and children is not markedly different except in the case of abdominal tuberculosis, which is predominantly a disease of children, and to a lesser degree in respect of bone and joint tuberculosis which has a somewhat disproportionate incidence upon adults. I therefore returned to my records and abstracted the cases with a history of exposure, dividing them into adults and children. The result is shown in Table V.

TABLE V.

Cases with a history of contact with a pulmonary case.

Classification.	Adults and per cent.	Children and per cent.	Total.	Ratio of children to adults (per cent.).
Bones and joints	24 (22·64)	65 (18·31)	89	2·7
Abdominal ..	10 (9·48)	106 (29·86)	116	10·6
Peripheral glands	51 (48·11)	105 (29·58)	156	2·0
Other	21 (19·81)	79 (22·25)	97	2·8
Total	106 (99·99)	355 (100·00)	458	3·31

It would take too long to find the proportion of children in all the cases of non-pulmonary tuberculosis, and so I take the records of the tuberculosis institutes, in which the children amount to 2625 out of 4469, or more than half the total, and, with this proportion as a basis, eliminate from the total given in Table I. the proportion which may be regarded as probably adults (Table VI.).

TABLE VI.

Estimated cases of non-pulmonary tuberculosis *in children* in the City of Liverpool during 1921–27, divided into (A) those with *no* history of exposure, and (B) those with a history of exposure to a pulmonary case of tuberculosis.

Site of disease.	A.—No exposure.	B.—Exposure.	Proportion of total expressed per cent. A.	Proportion of total expressed per cent. B.	Difference of percentage.*	Probable error of difference (per cent.).
Bones and joints ..	772	65	24·18 ±1·01	18·31 ±1·38	−5·87	±1·71
Abdominal	829	106	25·97 ±1·05	29·86 ±1·64	+3·89	±1·95
Peripheral glands ..	945	105	29·60 ±1·09	29·58 ±1·63	−0·02	±1·96
Other, or ill-defined	646	79	20·24 ±0·96	22·25 ±1·49	+1·01	±1·77
Total	3192	355	99·99	100·00	—	—

The deductions from Table I. have to be somewhat modified for children:—

1. Bone and joint tuberculosis is significantly in excess in those having *no* history of exposure to human infection.
2. Abdominal tuberculosis is in slight excess in those having a history of exposure.
3. Peripheral glandular tuberculosis occurs with as high a frequency among those exposed as among those not known to be exposed to human infection.

There is therefore a direct contradiction between the figures I now publish and the results of bacteriological investigation. Possibly the discrepancy arises from differences in the age-distributions of the populations investigated; or there may be geographical differences; or the cases bacteriologically investigated may be representative of only a portion of the whole—e.g., the more severe cases.

It is of some interest to note that, although the collection of the data has occupied seven years, their analysis has taken only two days; yet it is this comparatively slight labour which is usually shirked. Use has been made of Pearson's tables for the value

[1] THE LANCET, 1922, i., 1146.

of χ, Miner's tables of $\sqrt{pq}$, Barlow's tables of squares, and a calculating machine for the multiplication and division.

I have to express my thanks to Dr. A. A. Mussen, Medical Officer of Health for the City of Liverpool, for permission to publish these figures.

THE PERMANENCE OF THE SCHICK NEGATIVE STATE.

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AND
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IT is customary to assume that the state of immunity to diphtheria which is indicated by a negative Schick test is permanent. This is suggested by much experimental work on the duration of active immunity, but, because modern methods of diphtheria prevention are of such recent date, it is impossible to examine the expectation by actual experience in human beings. This paper records the results of retesting children at intervals after a negative Schick test was obtained, the maximum interval being seven years. An investigation has also been made of the capacity of response to artificial immunisation of any who may have become positive after having once been negative. 973 children were retested one to seven years after the first negative Schick test. All were negative with the exception of 28 (2·9 per cent.). 541 children were retested after one to three years, 191 after three to five years, and 241 after five to seven years. After one to three years the percentage of positives was 2·6, after three to five years 5·3, and after five to seven years 1·7, differences which are probably not significant.

The 973 children may be subdivided into two groups—viz., 533, who were negative to the original Schick test one to seven years previously, and 440, who were positive on the original Schick test and became negative only after injections of prophylactic mixtures (vide table). 527 children (98·9 per cent.) of the 533 who were negative on the original Schick test one to seven years previously were read as negative on retest, and 6 (1·1 per cent.) as positive. 418 (95 per cent.) of the 440 in the immunised group were negative on retest and 22 (5 per cent.) were positive. It will be seen that there is little difference in the Schick-positive rate of the two groups. Further tests may, however, confirm the observation that children who have been immunised by artificial methods show a somewhat higher percentage of positives on retest than those who have become immune in response to the weaker stimuli which they may receive naturally. It may be possible that some individuals can be immunised only by the larger stimuli introduced in prophylactic mixtures, and that these people are prone to lose some of the antitoxin they may thus with difficulty acquire. One or two individuals who gave faint reactions may have been wrongly read as positive in our recent retesting, but it is better to read as positive one or two doubtful reactors who are really immune than to pass as Schick-negative a susceptible subject. The Schick level of immunity corresponds to about 1/100th to 1/30th of a unit of antitoxin per c.cm. of blood. The Schick-negative reactor contains more than this amount and the Schick-positive reactor less.

Group 1.—533 Children Negative on Original Test.

In six children who were originally Schick-negative one to seven years previously a positive Schick result was obtained, indicating a quantity of antitoxin less than 1/50th of a unit per c.cm., but four of the six became negative within a brief interval of the Schick test injection. Thus, two weeks after the Schick test was made, a blood sam from one child was examined and found to contain half unit per c.cm. Blood samples from two other childr contained 1/10th unit of antitoxin per c.cm. within o week of the Schick injection, and a fourth child had 1/100 unit in two weeks and gave a Schick-negative reaction three weeks. Only 2 (0·4 per cent.) of the children (ital in table) required an injection of an immunising mixtu One had no detectable antitoxin in seven days, was given immunising injection of toxoid-antitoxin at 14 days, h 1/100th unit at 21 days, and was definitely negative a fortnig later. The other gave a positive reaction to a second re-Schi one week after the first, had less than 1/1000th unit antitoxin, and was given 1·0 c.cm. of an immunising mixt after two weeks and had 1/250th unit of antitoxin in fo weeks. This child has recently had another 1·0 c.cm. d of a prophylactic mixture and is still under observation.

The first four cases afford a parallel to the experiments Glenny and Allen (1922) on rabbits and guinea-pigs; th found that even 1/20th of a Schick test dose might act a "secondary stimulus" (Glenny and Sudmersen, 192 causing a rapid production of antitoxin in an animal wh had once been actively immune but which had subsequen lost some or all of its circulating antitoxin. The pres investigations have amply confirmed Glenny's observatio and there is no room for doubt that such a small amou of toxin as 1/50th of the guinea-pig minimal lethal dose l a pronounced influence on the amount of circulating antito actively produced, even of such a large animal as a hum being. This point has already been discussed by O'Br (1926), who instanced six cases in which a Schick test d produced a demonstrable rise in antitoxin in activ immune subjects. Similar observations have been made Kellogg and Stevens (1927).

Group 2.—440 Children Positive on Original Test and Negative immediately after Immunisation.

Twenty-two children (5 per cent.) in this group w positive on retest one to seven years later, but, as in first series, all but 2 (0·4 per cent.) developed antito rapidly in response to the stimuli of Schick injections. will be seen from the table that five of the children were s positive or partially positive on a second re-Schick in second or third weeks, but one week later all five l 1/25th to 1/5th unit of antitoxin. Two reactors who w more refractory (italics in table) were a brother and sis at a poor-law institution who had been very difficult immunise in 1925. They had both required two courses diphtheria prophylactic mixture—six injections of 1·0 c.c in all—but were, we think, undoubtedly Schick-negat finally, the boy within two months and the girl within f months of the last immunising injection. We are confid that the toxin dilutions with which these tests were m were of satisfactory potency on both occasions. On ret three years later both children were positive, and a one week and four weeks had no detectable antitoxin in blood (i.e., less than 1/2000th unit per c.cm.). Schick te in the first and fourth weeks were also positive. In the f week they were given 1 c.cm. of toxoid-antitoxin mixt Two weeks later the boy had 1/25th unit of antito indicating a fairly brisk response, but his sister still remai refractory and is receiving further injections.

Discussion.

It will be seen that there is very little differe between the two groups, which can now be conside together for purposes of discussion. At first sight percentage of children who had reverted to Schick-positive state after having once been negat is disquieting; 28 children (2·9 per cent.) of 973 w had been read as negative one to seven years previou were regarded as positive on retest. It is, howev reassuring that only four children (0·4 per ce required immunising injections, and that three of four showed a marked rise in antitoxin within one three weeks of a single dose of prophylactic mixtu It is doubtful, therefore, if the immunising mechan of these children would really have been slugg vis-à-vis an average infecting dose of virul organisms. The fourth child (0·1 per cent. of entire series) is in a different category, for she fai to show the slightest response to an injection 1·0 c.cm. of toxoid-antitoxin mixture.

The efficiency of the Schick dose of toxin a "secondary stimulus" is remarkable. It is a v small amount of toxin, originally founded on 1/5 of the guinea-pig minimum lethal dose, and combining power is equivalent to 1/1000th of a u

f antitoxin. If, however, a Schick-negative reactor as lost some of his antitoxin and becomes Schick-ositive, with little or no detectable antitoxin, the chick dose of toxin may be sufficient to make him ace again Schick-negative. In other words, active mmunity with the capacity for responding to a fresh imulus has remained, although circulating antitoxin ay have been lost. The fact that a Schick dose of oxin may be capable of stimulating the production of rculating antitoxin in an actively immune subject ust be borne in mind in connexion with every type experiment, in animals as well as in human beings, which serial Schick tests are used for the study of anges in immunity.

Over and above the series under review we have tested a group of 194 children who were negative on ie original test three months previously. All were gative on retest.

The observations, so far as they go, while not mpletely establishing the dictum "once Schick-gative, always Schick-negative," support the ore general statement "once immune, always mmune," if by immunity we imply a more ready otective response to the invasion of the specific oxin. One would expect such a "potential" mmunity to be sufficient to protect an individual gainst any serious infection by the diphtheria acillus.

Tests on 973 Children.

fter 1–7 years: re-Schick.			Weeks after re-Schick.					
			1	*2*	*3*	*4*	*5*	*7*
33 children egative on original chick test.	−527 (98·9%)	1	..	1/2*	..	..	..	..
		2	1/10	..	..	..	..	..
	+6 (1·1%)	1	..	1/100	−	..	..	..
		1	*Nil*	*M*	*1/100*	..	−	..
		1	+	*1/1000*	..	*1/250*	(*a*)	..
			..	*M*	..	..	..	..
40 children positive on original chick test nd negative mmediately after mmunisation.	−418 (95·0%)	2	1/2	..	..	..	..	..
		1	1/50	1/25	1	..	..	..
		2	1/100	..	..	1/25	..	..
		1	1/100	−	..	..	..	..
		1	..	1/100	−	..	..	..
		2	..	1/100	±	1/25	..	..
		2	1/250	1/50	..	..	..	..
		1	1/250	..	−	..	..	..
	+22 (5·0%)	1	..	1/250	1/5	..	..	..
			..	+	..	..	..	..
		1	1/500	..	..	1/50	..	..
		2	..	1/750	1/5	..	..	..
			..	+	..	..	..	..
		1	1/1000	..	−	1/25	..	..
		1	−	..	..	..	..	..
		2	±	−	..	..	..	..
		1	*Nil*	..	..	*Nil*	*M*	*1/25*
			+	..	..	+	..	..
		1	*Nil*	..	..	*Nil*	*M*	*Nil*
			+	..	..	+	..	(*a*)

* = Half a unit of antitoxin per c.cm. of patient's blood.
(*a*) Further details incomplete.
M = Toxoid antitoxin mixture −1·0 c.cm.
+, ±, −, = Reaction to Schick test.

Summary.

(1) 533 children who were Schick-negative on the iginal test were retested one to seven years later, id showed a 1·1 per cent. Schick-positive rate.

(2) 440 children who were Schick-positive on the iginal test were rendered Schick-negative by imunisation. When retested one to seven years ter 5 per cent. were found to be positive.

(3) In both these groups nearly all the "relapsed" hick-positive individuals rapidly produced circu-ting antitoxin in response to very small amounts of phtheria toxin, and could be considered as in a state active immunity.

We have to thank Mr. A. T. Glenny for valuable lp and advice as well as for the numerous blood rations which he has kindly done for us.

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THE SCREENED RADON SEED IN THE TREATMENT OF MALIGNANT DISEASE.

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FOR many years attempts have been made to treat tumours by implanting into them small pieces of capillary glass tubing containing radium emanation, but the results of such treatment have been unsatisfactory owing to the necrosis induced by this method, the glass capsule allowing the very destructive β rays to pass into the surrounding tissues.

The use of a capillary seed enclosed in a metal case having attached to it a fine thread has only recently been adopted in this country, though the method has been extensively used in America, particularly by Dr. Joseph Muir, of New York. No statistics of value can yet be given from a series of patients treated with seeds at the Radium Institute, London, but the results which are being obtained are encouraging, more especially in those cases which past experience has shown respond poorly to other forms of radium therapy. The object of this paper is to indicate the type of case most likely to derive benefit from this particular method of radiation and to give a brief description of the apparatus employed at this Institute.

Apparatus.—The seeds are cylindrical shells of platinum tapered at both ends, encasing a piece of capillary glass tubing containing radium emanation. Each seed is 6 mm. long and 1·1 mm. in diameter, having a wall of 0·3 mm. of platinum. Attached to the seed is a fine black thread which serves the dual purpose of marking the position of the seed in the tumour and facilitating its removal when the required dose has been given.

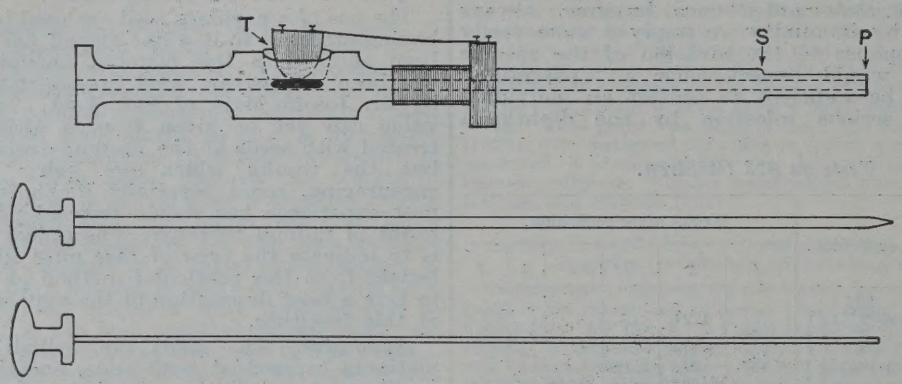
Dosage.—The majority of the patients have been treated with seeds each containing 1·5 millicuries of radon at the time of implanting, giving 200 millicurie hours of radiation if left in the tumour 14 days, by which time its radio-activity is negligible. The platinum screen 0·3 mm. in thickness allows about 90 per cent. of the gamma rays to pass through with less than 5 per cent. of beta rays.

Technique.—A trocar, with a special cannula as shown in the diagram, is used for implanting the seeds. The instrument having been loaded with a seed through the slot T it is inserted into the tumour up to the shoulder S. On withdrawal of the trocar the seed is forced into the lumen of the cannula by the spring and may then be pushed into the tissues with the stilette. It is a point of importance that the use of "introducers" with known but varying lengths from point P to shoulder S, enables the operator to plant seeds at known depths from the surface. As a general rule the seeds in a tumour should be about 2 cm. apart. Seeds may be implanted into tumours of the bladder through an operating cystoscope, using flexible introducers, and special instruments have been devised for use through the œsophagoscope and the proctoscope.

After-treatment.—The threads of seeds introduced anywhere in the buccal cavity may be bunched together, brought out through the mouth, and fixed to the skin of the cheek with adhesive plaster. Experience has shown, however, that patients tolerate the presence of the threads better if they are cut short ($\frac{1}{2}$ inch) and left free. While it is customary to remove the seed by gentle traction on the attached thread when its period of activity is over, no ill-effects have been noted in cases where the seeds have been left permanently in the tissues.

Advantages of the Method.

The advantages of seeds over other forms of radium applicators are: 1. By suitable spacing of the seeds throughout the whole tumour a uniform radiation is obtained. 2. The seeds are easily introduced and can be accurately placed in position. 3. Owing to their small size they are retained at the required site. This is of particular advantage in regions where the soft tissues are scanty—e.g., the alveolar margin. 4. Screened seeds without threads may be used in the treatment of tumours from which the recovery of radium needles would be difficult. 5. Patients are not confined to bed throughout treatment, but are able to attend as out-patients for regular examination. 6. Some hours after the insertion of radium needles into tumours of the tongue, for example, it is a common experience to find the heads of the needles becoming exposed, however completely they may have been buried at the time of operation. This is probably due in part to the movement of the tongue and in part to the traction of the heavy silk threads attached. Burns of the mucous membrane of the buccal cavity are likely to result unless special shields covering the alveolar margins and cheeks are employed. Seeds by remaining completely embedded in the tissues minimise the risk of burns and make the use of the cumbersome screens unnecessary. 7. Trauma is minimised, the seed causing little damage to the tissues both at the time of insertion and removal, owing to its size and shape. This is an important factor when dealing with malignant disease.



Cannula, trocar, and stilette, used for implanting radon seeds.

Types of Cases most Suitable for Seed Treatment.

While most malignant tumours may be treated as satisfactorily with seeds as with other forms of apparatus, their use at the Radium Institute has been confined to tumours which, owing to their position, would not receive uniform radiation by other methods.

These may be divided into two main groups. In the first are placed tumours where the retention of radium needles is difficult owing to the constant and unavoidable movement of the structures or to the small amount of soft tissue present. Examples of such tumours are those of the palate, the floor of the mouth, gums, frænum of the tongue, mucous membrane lining the cheek, tonsil, larynx, and pyriform fossa. Into regions such as these it was customary to insert comparatively large doses of radium to act for a short time. This method gave non-uniform radiation, sometimes followed by severe reaction and sloughing. Seed treatment of such patients gives them the triple advantage of a minimum of discomfort, uniform radiation, and a comparatively small dose of radium acting over a period of many days.

Into the second group may be placed tumours whose inaccessibility makes both the inserting and recovering of radium needles a difficult and frequently hazardous undertaking. It is unnecessary to give a list of these tumours which would include such commonly occurring ones as carcinoma of the œsophagus, stomach, prostate, rectum, and bladder. By employing suitable introducers radon seeds may be implanted into most of these, thus ensuring their complete radiation.

Mention must also be made of the suitability seeds for the treatment of small malignant nodul The small size of the seed enables it to be complete embedded at the site required. Needles inserted in such nodules frequently cause damage to the su rounding tissues which receive rays from the pr jecting ends, while small surface applicators a unlikely to remain in the required position for pr longed periods.

While this paper has been devoted to the descri tion of treatment with seeds alone, we have frequent found them of use in conjunction with other forms radium apparatus.

Illustrative Cases.

The following cases, in which the diagnosis h been confirmed by section, illustrate the resul which are being obtained after treatment of t primary lesion with radon seeds.

CASE 1.—*Surface epithelioma*, with little surroundi healthy tissue. Male, aged 61, Treated June 19 1928. Fu gating ep thelioma the right e 3·0 cm. diamete growing f two yea Four see were insert into t tumour a left there six day Preser conditio tumour longer pr sent, ulc healed.

CASE *Carcinom floor of mou* —Male, ag 59. Treated in May, 1928. Patient had a malignant ulcer the floor of the mouth, which had been noticed for abo three months. The ulcer, which had hard edges, extend from the mid-line, backwards beneath the tongue on t left side for about 4 cm. Ten seeds were inserted a allowed to remain for seven days. Present conditio ulcer is completely healed. Movements of the tongue a free.

CASE 3. *Carcinoma of alveolar margin.*—Male, aged Treated January, 1928. Patient had been unable to w his lower denture during the latter part of 1927. He w found to have a hard, coarsely papillated carcinoma on t alveolar margin of the right lower jaw. Four seeds w inserted for 14 days. On examination in March act disease was noted at each end of the area treated on first attendance. Four seeds were again inserted. Pres condition: a smooth white scar, soundly healed.

CASE 4. *Carcinoma; frenum of the tongue.*—Male, aged Treated March, 1928. This patient had a large carcinom tous ulcer in the mid-line beneath the anterior part of t tongue, spreading on to the floor of the mouth and on the alveolar ridge. Nine seeds were inserted for ten da Present condition: soundly healed, no sign of disease.

CASE 5. *Epithelioma of mucous membrane lining the cheek* Male, aged 70. Treated April, 1928. Patient had a s plaque with a velvet-like surface on the buccal muco membrane of the right side of the mouth. The disea area was 3·0 by 2·0 cm. in size with little surround infiltration. Six seeds were inserted for ten days. Pres condition: no evidence of disease.

CASE 6. *Epithelioma of mucous membrane of cheek a gum.*—Male, aged 84. Treated January, 1928. On exa nation this patient was found to have a malignant ulcer w indurated edges and base, involving the right alveo ridge and spreading on to the mucous membrane of the ri cheek. Five seeds were implanted and removed 14 d later. Present condition: no sign of disease in the mou

CASE 7. *Sarcoma of tonsil.*—Female, aged 73. Treat February, 1928. This patient had a firm, smooth swell in the left tonsillar region, which had been noticed three months. Six seeds were implanted. Three w recovered 14 days later and three remain permanently in tissues. Present condition: tumour has entirely appeared. Mucous membrane is intact.

ASE 8. *Carcinoma of palate.*—Male, aged 60. Treated e, 1928. This patient was found to have an ulcer ered with slough, involving the whole of the soft palate, extending forwards on to the hard palate. Ten seeds e inserted for 14 days. Present condition: after a very k reaction the ulcer is now almost healed.

ASE 9. *Carcinoma of pyriform fossa.*—Male, aged 52. ated April, 1928. This patient, who had experienced e dysphagia for six months, was found to have a large gating growth of the pyriform fossa, obscuring the cords. e radon seeds were inserted for five days. He was mined again at the end of June. His symptoms had been ved and the growth had shrunk to about one-third of original size, the left cord, and part of the right, being ble. Five seeds were again inserted and left for 14 days. first dose of radon was a small one owing to the possi- y of acute œdema and obstruction.

ASE 10. *Carcinoma of bladder.*—Male, aged 54. Treated ch, 1928. The patient complained of hæmaturia which ted in January, 1928. On examination he was found ave a large infiltrating growth on the right side of the e of the bladder. Eleven seeds were inserted into the our. Present condition: satisfactory; patient has no her symptoms, and all bleeding has ceased.

ASE 11. *Epithelioma of anal canal.*—Male, aged 54. ated December, 1927. This patient had a hard, craggy, rated growth encircling the anal canal immediately in the anal sphincter. Pain and the passage of blood rectum were prominent symptoms. Twelve seeds were rted through the skin and left in the tissues at the phery of the growth. On examination three months r no tumour could be detected. The pain and hæmor- ge had ceased.

eeds have been successfully planted into growths the œsophagus, but sufficient time has not yet osed to enable an opinion of the value of the hod to be given.

General Conclusions.

. The initial response of the tumour is more rapid n that seen with other forms of radium therapy. The local reaction is brisk in some instances. nother series of patients is now being treated with re heavily screened seeds.) (3) Owing to the very all size of the seed in proportion to the dose of ium it contains, there is a tendency on the part he surgeon to implant the seeds too close together, l this over-radiation may possibly account for the ere reaction occasionally met with. (4) The use seeds enables those tumours, which owing to their ure or position are difficult to treat by other thods, to receive thorough radiation.

We wish to express our gratitude to Mr. W. Lester on, physicist at the Radium Institute, and to his istant, Mr. A. E. Southon, for their helpful advice l skill in the preparation of the apparatus.

THE BROMSULPHALEIN TEST OF LIVER FUNCTION.

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ABOUT 18 months ago my experiences of this test e published, and they were distinctly unfavourable, a number of normal cases gave abnormal results, l even in cases of definite liver disease 20 per cent. the readings were at variance with the clinical dence.[1] For this series a bromsulphalein was de in this country, on the lines of statements made Rosenthal and White in the *Journal of Pharma- gy and Experimental Therapeutics* in 1924. It was sequently found that this dye differed in certain rticulars from that of Rosenthal and White, and consequence did not give results representative of r efficiency. Bromsulphalein is, at any rate at sent, a proprietary obtainable only from Hynson, Westcott, and Dunning, of Baltimore. I am indebted to them and to Dr. White for having sent me the dye for use in this new investigation. The results are set out below, and they are a contradiction of the previous ones published.

A review of the history of the test was given at some length in a previous paper,[1] and only a few salient points need to be repeated. Bromsulphalein or phenoltetrabromphthalein sodium sulphonate was prepared by White; it is a whitish powder very freely soluble in water, and it can be given with impunity by intravenous injection in a concentrated solution. It is non-irritant, and in ordinary doses absolutely non-toxic. Normally the dye is seized by the liver, and the majority is excreted in the bile, traces only appearing in the urine. The rate of disappearance of the dye from the blood serum is important—after five minutes 20–50 per cent. remains in the blood, whilst at the end of half an hour there is none at all or a mere trace. It was argued that if the liver were damaged it would remove the dye with less rapidity from the blood after injection, and that the degree of retention of dye in the blood stream would give an indication of the degree of liver damage; the originators of the test, Rosenthal and White,[2 3 4] denied that it had any dependence upon biliary permeability.

Technique.

The patient is weighed and the dosage is calculated on a basis of 2 mg. of the dye per kilo body-weight—the body-weight of the patient in pounds divided by 55 will give the exact quantity in cubic centimetres of the 5 per cent. solution employed. It is injected slowly into one of the arm veins. Thirty minutes after the injection a sample of blood is withdrawn, preferably from the opposite arm, and in cases of early liver disease it may be necessary to take a sample after five minutes. After the blood has coagulated it is centrifugalised and the clear serum is pipetted into two small test-tubes. To one of these is added one or two drops of a 10 per cent. solution of sodium hydroxide to bring out the colour of the dye, and to the other tube a drop of 5 per cent. hydrochloric acid to clear the serum of any hæmolysis. The amount of dye in the serum is now estimated by direct comparison with a series of standards, using a simple comparator box in the usual way. The standards may be prepared by adding 4 mg. of the dye to 100 c.cm. of water that has been alkalinised with 0·25 c.cm. of a 10 per cent. solution of sodium hydroxide. This represents the 100 per cent. standard, and a series is prepared ranging from 5 per cent. upwards by dilution with alkaline water. In practice it is much simpler to employ the series of non-fading standards prepared by Hynson, Westcott, and Dunning. The 100 per cent. standard represents the amount of the dye that would be present in the blood stream if none were removed; it is thus an arbitrary standard calculated on blood volume.

Clinical Findings.

(*a*) Rosenthal and White[4]:—

	Cases.	Retention expressed in percentages after 30 minutes.
Non-liver	25 ..	0 or a mere trace.
Obstructive jaundice ..	5 ..	97, 96, 90, 35, 30.
Cancer of liver	2 ..	99, 20.
Catarrhal jaundice ..	3 ..	75, 50, 35.
Arsphenamine jaundice ..	2 ..	47, 22 (after 15 min.).
Biliary cirrhosis	1 ..	45.
Portal cirrhosis	3 ..	?, 22, 17.
Syphilitic cirrhosis ..	1 ..	3.
Pre-eclamptic toxæmia ..	1 ..	30.
Acute cholecystitis ..	1 ..	10.
Chronic „ ..	1 ..	5.

(*b*) Friedenwald and Armstrong[5]:—

Catarrhal jaundice ..	2 ..	28, 36.
Cirrhosis of liver	5 ..	50, 40, 0, 5, 18.
Cancer of liver	9 ..	20, 45, 10, 36, 5, 8, 24, 18.
Syphilis of liver	1 ..	0.
Cancer of pancreas ..	2 ..	32, 24.

Non-liver Cases.—Cancer of stomach, 5; chronic cholecystitis, 11; achylia gastrica, 7; hyperchlorhydria, 10. All of these showed no retention.

(*c*) Rouillard [6] :—

Non-liver	25	..	No retention or a mere trace.
Cancer of liver	1	..	99.
Cancer of pancreas ..	1	..	97.
Suppurative cholecystitis	2	..	95, 90.
Catarrhal jaundice ..	3	..	75, 50, 30.
Arsenical jaundice ..	1	..	47.
Cirrhosis	3	..	45, 22, 17.
Calculous cholecystitis ..	2	..	10, 5.
Syphilitic cirrhosis ..	1	..	3.

(*d*) *Personal Cases.*—The technique used was that described above, and the results are expressed as the percentage retained after 30 minutes so that the figures are strictly comparable to those in the accompanying tables.

Non-liver Cases.

Gonorrhœa	9	..	5 ; three=0 ; five=trace.
Dyspepsia	2	..	5, 0.
Progressive muscular atrophy	1	..	0.
Hysteria	1	..	0.
Lymphadenoma	1	..	0.
Tb. abdomen	1	..	0.
Convalescent nephritis ..	1	..	5.
,, pneumonia ..	1	..	0.
Cancer of breast	1	..	Faint trace.
Slight cerebral thrombosis	1	..	Faint trace.
Normal	3	..	Trace, 0, 0.
Aortic incompetence ..	1	..	0.
Progressive bulbar paralysis	1	..	0.
Pleural effusion	1	..	5.
Pericarditis (convalescent)	1	..	0.
Asthma	1	..	0.

Liver Cases.

Portal cirrhosis	7	..	0, 25, 28 and 30, 7, 0, 25, faint trace.
Obstructive jaundice (cancer of pancreas).	4	..	105, 105, 40, 30.
Catarrhal jaundice ..	2	..	0 (convalescent, conjunctivæ just icteric), 53.
N.A.B. jaundice	5	..	0 (7 months after). 50 (22/6/27), 5 (29/6), 0 (6/7). 0 (15/7), 5 (21/7), conjunctivæ just yellow. 15, jaundice rapidly clearing. 70 (18/2/28), 105 (23/2).
Syphilitic jaundice (secondary stage).	1	..	75 (2/3/28), 10 (28/3) after a course of N.A.B., much less yellow.
Cholecystitis	2	..	15, 10 (faintly subicteric).
Obstructive biliary cirrhosis following cholecystectomy—rigors, jaundice, enlarged liver and spleen.	1	..	11/8/27 : 25. 3/9 : 10—less jaundice. 7/9, drainage of common duct ; almost died of cholæmia. 29/9 : 10.
Cardiac liver — moderate jaundice.	1	..	18.
Non-calculous cholangitis with intermittent painless jaundice for 2 years.	1	..	30 (11/8/27), 30 (3/9).
? Pancreatic calculus ..	1	..	0.
Acholuric jaundice with cholelithiasis.	1	..	12.
Tested during N.A.B. treatment—no symptoms.	2	..	10 (last injection 14 days before) ; 0 (2 days before).
Congenital chorea ..	1	..	0.
Primary cancer of liver without jaundice.	1	..	5.

During the administration of choriotrope three cases were tested :—

1. 35 c.cm. given, the last dose being 18 days before the test and followed by jaundice—now clear. 40 per cent.
2. 15 c.cm. given, the last one month before the test. 0 per cent.
3. 33 c.cm. given, the last ten days before the test. 0 per cent.

Two of these cases require a little amplification ; the fifth case of N.A.B. jaundice showed a very much greater retention after a period of treatment than before it (105 per cent.) ; she was clinically improved, however. A possible explanation is that the injection was given into the same vein from which blood was later withdrawn ; it is probable that the sample was thus accidentally contaminated with dye from the skin or from the vein. One of the cases of cirrhosis was admitted to hospital for a painless hæmatemesis, a bromsulphalein test showed merely a faint trace of dye after half an hour ; at operation later a definite early cirrhosis of the liver was found. There was no reason to suspect a sufficient degree of functional incompetence to produce any dye retention.

Conclusions.

1. Normal cases and those without any liver le showed a retention of 5 per cent. to a mere trac even no dye at all.

2. Cases of liver disease showed a retention w probably represented fairly accurately the degr liver damage or functional impairment ; 100 per retention means that no dye is removed from blood, and a retention of, say, 50 per cent. w mean that the liver was 50 per cent. incompe and so on.

3. The test is one of liver function and no biliary permeability ; this is proved by the fact many of the cases of complete obstructive jau did not give a 100 per cent. retention.

4. The test is safe, simple, and it appears to b best one we have.

Finally, the writer would like to express his th to the honorary medical and surgical staff of General Hospital, Birmingham, for their kindne giving him access to their cases.

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Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEAL

THE following are some of the 1927 statistic seven districts :—

Name of district and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population. All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Death-ra per 10 births Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.
Grimsby C.B. .. (88,340)	18·7	11·7	1·19	1·38	2·4	1·4	66/29	5·
West Bromwich C.B. (81,140)	20·2	12·4	0·66	0·97	4·7	1·3	107/43	14·
Carlisle C. and C.B. (56,620)	18·3	12·3	1·09	1·39	2·4	1·6	68/24	8·7
Eastbourne C.B. (56,710)	11·5	11·5	0·80	2·0	1·7	1·9	44/18	1·
Tunbridge Wells B. (33,870)	12·8	15·7*	0·68	2·26	3·1	3·0	48/23	0·
Leamington Spa B. (30,050)	13·5	14·1*	0·99	1·69	2·7	2·4	69/42	7·
Colchester B. .. (45,170)	15·6	11·2	0·75	1·46	1·9	1·9	46/—	1·3

C.B. = County Borough. B. = Borough.

Health resorts, by attracting as residents old peopl invalids, swell many of their death-rates. Thus the death from all causes of Tunbridge Wells and Leamington Spa, standardised for age and sex constitution of the popul become 11·5 and 10·74 respectively. The contrast betwee infant and neonatal mortality-rates of the three health r shown above is very striking.

Grimsby.

Dr. B. C. Stevens reports that the muni maternity home, with ten beds, erected on council's housing site at Nunsthorpe, was opene the admission of cases on Sept. 19th. Dr. Ste thinks it will soon need enlarging. Seven notifica

d six deaths from encephalitis lethargica were corded during the year. The notification of tuberlosis is still not nearly so complete as it might be. the 105 total deaths, 24 were of cases not eviously notified, and only 29 lived for six months er notification. Insufficient institutional accomodation has been some excuse for incomplete tification in the past, but a scheme now under nsideration for the extension of treatment facilities ght to meet this objection. Another feature of the rk that requires development is the examination contacts. At present the staff is insufficient for e visitation of homes for this purpose, and home itation is considered by Dr. Stevens essential for e full development of examination of contacts. combined clinic supplies artificial light treatment for e dispensary, the infant welfare centres, and the nools. "On the whole the results have been very couraging and have amply repaid the expenditure." e total cases treated at the V.D. clinic during the t six years have been 1206, 827, 437, 465, 480, and 3, and the defaulters—that is, those who ceased to end before being cured—for the same years mbered 547, 479, 184, 93, 89, and 79. Dr. Stevens vocates the establishment of a centre where persons, o have exposed themselves to the risk of contracting nereal disease, can be immediately disinfected by skilled orderly. He thinks a capital expenditure £100 or a weekly expenditure of £4 would be ample the purpose, and that such a scheme would save ney by lessening the need for treatment. The ses of the six maternal deaths were puerperal sis 2, antepartum hæmorrhage 1, post-partum morrhage 1, and eclampsia 2. The midwives lise the importance of the antenatal supervision t upon them and are referring more cases to the enatal clinic. The new cases at this clinic numbered 5, the total births being 1624.

West Bromwich.

Dr. W. Stott reports that in September it was cided to reorganise the health visiting staff and to lace the part-time nurses from the district Nursing sociation by six newly appointed health visitors, o began their duties on Nov. 1st. The area of the ough is now divided into eight districts, and one se is responsible for all the health visiting services each district. The medical staff has unfortunately n reduced from three to two. As a result it is possible for the doctor to examine all the children ught to the centres, and it is also impossible to dertake antenatal and postnatal work. The outnding feature of 1927 was the large number of ths of children from pneumonia, caused by the valence of measles, whooping-cough, and influenza ing the first quarter. Dr. Stott advocates provision the home nursing of measles, whooping-cough, l pneumonia, with hospital accommodation for ere cases, and he further suggests that the first es of measles or whooping-cough in children under 5 uld be made notifiable. The instruction to the lwives to do antenatal work is receiving attention, renders the provision of an antenatal clinic all more urgent. Seventy-five stillbirths were notified 1927 as against 58 in the previous year. There is, yet, no definite orthopædic scheme, no scheme for home nursing of children under 5, no minor nent clinic in connexion with the welfare centres, l no dental treatment included in the maternity l child welfare scheme. Of the 46 deaths from monary tuberculosis 10 were those of cases notified, and of the 8 non-pulmonary tuberculosis ths 6 were those of unnotified cases. The sanitary pector, Mr. H. H. Spears, after comparing the ults of last year's housing inspections with those de of the same houses six and seven years previously, ls "that notwithstanding the general housing ivities of the council, conditions as regards two-nily occupation and overcrowding in such houses re in no wise improved." The new houses erected ing the year numbered 466 and included 286 muni-al houses. In a few outlying districts there are still some surface wells in use, and Dr. Stott refers to one used for the supply of three farms, which is liable to pollution by the overflow of the river. The opening of the new Health Department building in December will greatly facilitate the work.

Carlisle.

Dr. Joseph Beard says that the report calls for little comment and that the sanitary condition of the city generally may be said to be good. Out of 20 samples of fresh cow's milk two contained tubercle bacilli, resulting in the eliminiation of one milch cow from the city byres and of two outside cows from a herd in the Longtown area. The Ministry of Health have sanctioned 1728 municipal houses, 1540 "non-parlour" and 188 "parlour." Of these, 1394 have been completed and the remaining 334 were in course of erection at the end of the year. Dr. Beard complains that notification of tuberculosis is frequently so late as to be useless. During 1927 about 18 per cent. of the deaths were those of unnotified cases. A further 8 per cent. of the deaths occurred within one week of notification, while only 37 per cent. survived notification by more than three months. During 1926 the town clerk drew the attention of the medical men of the city to this failure to notify. The register of cases was completely revised during the year and now includes 145 males and 141 females of the pulmonary type and 46 and 47 respectively of the non-pulmonary type. This gives a total of 379, or about six times the average annual deaths during the last six years. Considerable difficulty is experienced in obtaining a satisfactory examination of contacts, but there is some improvement with regard to children. During the year the practising midwives attended 382 confinements and sent for medical help in 120, or more than 30 per cent. of their cases. The antenatal clinic was attended by 185 mothers who paid from three to four visits each; the total births numbered 1037.

Eastbourne.

Dr. W. G. Willoughby reports that 405 houses were erected during the year, of which 198 were municipal and 45 subsidised houses erected by private enterprise. No houses at low rents have been built recently except by the municipality, but houses at as low a price as £700 have been built for sale. The council assisted the private purchase of houses in 78 instances during 1927, making a total of 260 houses so dealt with. The temporary army hutments have been reduced from 188 tenements to 36 and the last 36 tenants are difficult to deal with, but "it is time that these huts should be totally demolished." The lowest rents for municipal "non-parlour" houses are 14*s.* 6*d.* weekly. The total of municipal houses occupied and planned is 723, but building for yearly needs must go on, says Dr. Willoughby, and particularly for those who canont afford the rent mentioned. Of the 764 applicants for new houses 90 have a whole house at present, 99 are newcomers, and 109 live outside the borough. Of the remaining 466, who have been in the borough more than five years, 78 have no child, 200 have one child only, and 89 have at least three rooms each. Dr. Willoughby estimates that there are at least 200 to 250 good tenants in a difficult position. There is too much sharing and subletting of houses, and many of the applicants would like a smaller house at a lower rent. Some of the municipal tenants have caused overcrowding by subletting. The municipal maternity home (ten beds) has been improved by the provision of extra accommodation for the staff and of facilities for antenatal work. The orthopædic clinic is run by a voluntary association for whom the local authority provides a consultant. An enclosure on the sea front, in connexion with it, allows sun treatment to be provided for children in the summer. Dr. Willoughby states that the regulations for the protection of meat have almost no practical effect owing to the restrictions involved. The majority of meat vendors object to sheltering the meat behind closed windows. Dr. Willoughby disagrees with those who favour the shortening of the stay of scarlet fever

patients in hospital. The revision of the tuberculosis register has reduced the cases to 318 which is about seven times the tuberculosis deaths for 1927. The rainfall for the year was 38·22 in. The sunshine record, 1698·8 hours, was the fourth highest recorded in the United Kingdom, excluding the Channel Isles and Scilly Isles.

Tunbridge Wells.

Dr. F. C. Linton says that apart from a sharp outbreak of influenza in February involving temporary school closure and causing many deaths amongst old persons, there was no notable outbreak of infectious disease during the year. The municipality works chiefly by subsidising voluntary institutions. Since April 1st, 1928, an agreement has been made for the treatment of children by massage, exercises, electricity, &c., at the clinic established at the general hospital. The district Nursing Association is subsidised for the home nursing of children and for the provision of a nurse-midwife in Rusthall. Payment is made by fees to various hospitals for the treatment of tonsils and adenoids. An arrangement has been made with the maternity home for the admission of municipal cases and three cases were sent in in 1927 where the mother's home environment was unsatisfactory and her circumstances needed financial aid. A chart shows that diphtheria was exceptionally prevalent from 1896 to 1900 and again from 1911 to 1915. Dr. Linton argues from these figures that the disease should be rife from 1926 to 1930 and in accordance with his prediction the notifications rose to 42 in 1927, after an average of about 12 for the four preceding years. There was only one death. The school report shows that the question of an open-air school for 40 children has been advanced a stage further by the raising of £1000 by voluntary contributions. Dr. J. A. Walker Wood began work as aural surgeon in the schools in April, 1927. The rainfall was 40 in. and the hours of bright sunshine 1527⅔.

Leamington.

Dr. W. L. Goldie reports that the baths have been rebuilt and now compare most favourably with those of any spa in the country. A new scheme of filtration has been installed for both the men's and women's swimming baths. The total number of council houses was brought up to 286 by the erection of 83 during the year. There were 12 subsidised private enterprise houses. The "Leamington Slum Clearance" Company built eight houses at Lillington which were intended to be let at an inclusive rental of 5*s*. a week, but were ultimately let at 10*s*. An agreement has been made with the Warneford Hospital for the subsidisation of three maternity beds. Mr. G. C. Alderson, who is in charge of the obstetric department of this hospital, conducts an antenatal clinic for the patients seeking admission to the hospital, and he has been appointed specialist for the purpose of the Puerperal Fever Regulations. The rainfall was 28·84 in. and the record of bright sunshine 1121·7 hours.

Colchester.

Dr. W. F. Corfield gives a table, which shows that 24 of the 35 infant deaths were due to congenital debility and premature birth. He hopes that the work of the antenatal centre begun in March, 1928, will help to reduce this figure. The deaths of children during the first year of life numbered 35, during the second year 14, and of those from 2 to 5 years 13. An effort is being made to find suitable premises for a maternity home, but so far unsuccessfully. The orthopædic clinic is doing good work and treated 17 infants as compared with 9 in the previous year. A difficulty has arisen with the local division of the British Medical Association with regard to the appointment of a consultant for the purpose of the Puerperal Fever Regulations. During the year 192 subsidised houses were built, 106 municipal and 74 by private enterprise. Reports of overcrowding are still received and there is need of accommodation for the poorest working-class families. Unfortunately a large number of families have to live in two rooms or even one room owing to the cost of housing accommodation. During the p years there has been much building of new houses the outskirts. This is being now followed by t extension of water mains and sewers, which sho ultimately enable shallow wells to be closed a cesspools to be abolished. During 1927, howev 19 new cesspools and 7 new wells were construct About 550 " hand-flushed " closets have been provic with a water-supply during the last three years.

SCHOOL MEDICAL SERVICE.

Name of district.	No. on roll.	Aver. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found o routine examinati requirin treatmen
Northampton C.B.	12,352	11,107	3,432	7,687	18·7
Bournemouth	7,984	6,796	2,160	3,952	14·0
Hull	47,517	38,614	17,075	34,719	15·8

* Excluding uncleanliness and dental defects.
C.B. = County Borough.

Northampton.

It would, we think, be admitted that the extent the facilities for preventing and treating child defect and disease is a fair measure of the inte taken in child hygiene by any community. Jud by this standard Northampton comes out badly, in this county borough even the routine inspecti cannot be overtaken by the school medical staff, much of the value of their work is necessarily l Dr. Stephen Rowland, in his introduction to the re by Dr. J. H. Mason, says he does not think that two sessions per week now given by the assist tuberculosis officer will be sufficient to keep pace w the work; he does hope, however, that the arre in dental treatment will be made up by the sec dentist now appointed. Dr. Mason, who until October carried out the school medical work sin handed, draws attention to the large number (246 delicate, anæmic, and debilitated children who wo benefit by the régime of an open-air school. Rowland is " not convinced that the so-called ' op air school ' is much in advance of the latest element schools opened in Northampton." He does describe the conditions of these new schools, bu would seem that a properly constituted open school, with a specially designed curriculum, wh there is fuller medical supervision, extra rest, suita meals, and out-of-doors lessons and games, is m suited to the needs of a delicate child than even most modern elementary school where the curricul and routine work are arranged for the average heal normal child. It is often the endeavour to keep p with his more lusty fellows that pushes the delic child over the brink of definite ill-health. Dr. Ma describes the work done in Wellington-place Spe Mental Defective School, opened in 1907, and su vised from its inception by Miss Longland, who acts as secretary to the committee of volunt workers which looks after the welfare of past pu In all, 234 children have passed out, of whom 24 dead, 101 are either in institutions or not in w and 109 are partially or wholly self-support Whatever the future may hold in the way of prevent or of treatment of mental defectives, it is certain t the discipline, interest, and self-respect instilled by simple manual occupations at present taught in special schools is well worth the cost, for if tl unfortunates are left unheeded they become a gre burden on the community.

Bournemouth.

Dr. T. S. Stirling remarks that the general wor medical inspection is progressing satisfactorily, notes a continued improvement in the standar

onal hygiene due to the work of the school nurses, d by lending out, if required, of special combs with aflet of instruction. The dental work has been iently carried out, but there is still a long list ting treatment, and the pre-school child must not orgotten. Dr. Stirling says that in this, as in many ie other defects and diseases of childhood, preven- treatment should be attempted at an earlier age ; with a suitable physiological diet in infancy, will n the prevalence of dental caries in school lren. The idea of the special class for backward lren was to return these children after a course of 12 months to their own school with a reasonable ctation of making normal progress ; this has not realised, though the children have derived fit, especially physically. Probably there are in class all three types of retarded children—namely : The true backward, that is those who have merely education time through being handicapped by ise or physical defect, and thus need a recovery ; (2) the true dull, those who are mentally and better with concrete material, and thus need ndicraft class ; (3) the true mental defective, tally lacking in all kinds of intelligence, needing ing in concentration, stabilising in temperament, some degree of care, control, or supervision in -life. The formation of even this one experimental is of value, especially as it is a small one with 15 children, so that an energetic teacher will to group the children for herself. It is, however, ettable that there are no special schools and icularly no open-air school, for there are in rnemouth 246 delicate children with whom results d be obtained comparable with the splendid record iany similar towns.

Hull.

r. W. Allen Daley deals with important schemes of ganisation, details of which are given by his chief istant, Dr. J. Morrison. Routine examinations have eased from 15,526 in 1926 to 17,075. The standard narking for defects has been made slightly more igent, to bring it into line with that of other iorities ; thus the percentage of defects this year unts to 15·8 compared with 10·5 in 1926, although actual numbers of defects have probably not eased. Special inspections show a great increase he result of the new scheme by which teachers children to the medical officer at a school clinic, ead of waiting for a routine visit to the school. tment at the clinics has been greatly expanded 00 minor ailments were treated this year as nst 3281 in 1926. X ray treatment for ringworm in future be given by the two newly appointed ologists. In dental treatment there has also been organisation of the scheme, including an extension nclude the 5-year-old group, increased general ities with the appointment of an additional ist, and the elimination of casual cases, which are unsatisfactory. There are, further, some new rities at the clinic ; those of the aural surgeons, T. Ritchie Rodger and Mr. R. R. Simpson, whose rt opinion is found so valuable in cases of tonsils adenoids, and of the orthopædic clinic just started r Mr. R. B. Blair. This orthopædic clinic deals with cases referred by other departments—the ral public health, the tuberculosis, and the rnity and child welfare.

ne planning of this work as regards school-children temporarily upset by an epidemic of acute myelitis affecting 22 children over 5 years of age, over 70 below that age. Of the older group one during the attack, in four cases the paralysis ed up, and in 17 there remained varying degrees sability, though, as usual, there was some tendency rds recovery. The younger group is not similarly ribed, but it is certain, as Dr. Morrison says, that epidemic will leave lasting traces among the school- lren of future years. The action taken illustrates well the advantages of coördination. Many of the ms were isolated and treated in the City Hospital ; were examined by the school orthopædic surgeon, who prescribed the treatment to be carried out both in hospital and after discharge. Later they were taken to the Park Avenue School for physically defective children, where splints were applied when necessary, and appointments made for massage, electricity, or remedial exercises at the orthopædic clinic. In the case of private patients, letters were sent to the doctors offering facilities for treatment at the orthopædic clinic, which was in the majority of cases accepted. Two recently appointed orthopædic nurses carry out this treatment at the clinic under the supervision of the surgeon. Minor postural deformities are reported to the organiser of physical training for special exercises to be given at school.

Another important step has been taken in the new practice of examining mentally all the children admitted to the craft classes, thus raising these classes to their proper function of dealing with the concrete minded children, who are intelligent enough but not literary, instead of allowing these classes to become the dumping ground for all types of retarded and defective children. The whole report shows evidence of a highly efficient staff working with an enlightened local authority.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 4TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week :—Small-pox, 126 (last week, 149) ; scarlet fever, 1461 ; diphtheria, 882 ; enteric fever, 277 ; pneumonia, 526 ; puerperal fever, 39 ; puerperal pyrexia, 85 ; cerebro-spinal fever, 7 ; acute poliomyelitis, 2 ; acute polio-encephalitis, 2 ; encephalitis lethargica, 28 ; dysentery, 7 ; ophthalmia neonatorum, 139. No case of cholera, plague, or typhus fever was notified during the week.

A large proportion of the cases of enteric fever were notified in London and the home counties, viz. : London 87 (of which 26 in Kensington, 17 in Wandsworth) ; Buckingham, 4 ; Essex, 5 ; Hertford, 7 ; Kent, 7 ; Middlesex, 25 (of which Ruislip-Northwood 6) ; Surrey, 97 (of which Beddington and Wallington 24, Epsom 23, Sutton and Cheam 10, Epsom Rural 18). The 277 notifications included 175 cases of paratyphoid fever, of which 60 were notified in London, 83 in Surrey, and 11 in Middlesex.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on August 7th–8th was as follows :—Small-pox, 17 under treatment, 1 under observation ; scarlet fever, 1706 ; diphtheria, 1681 ; enteric fever, 72 ; measles, 263 ; whooping-cough, 187 ; puerperal fever, 14 (plus 9 babies) ; encephalitis lethargica, 71 ; poliomyelitis, 2 ; "other diseases," 15. At St. Margaret's Hospital there were 17 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (2) from enteric fever, 21 (2) from measles, 2 (2) from scarlet fever, 36 (4) from whooping-cough, 29 (5) from diphtheria, 50 (14) from diarrhœa and enteritis under two years, and 16 (4) from influenza. The figures in parentheses are those for London itself.

The fatal case of enteric fever outside London was reported from Edmonton. Of the 19 fatal cases of measles outside London, 6 were reported from Liverpool and 3 from Newcastle-on-Tyne. Belfast reported 5 in the same week. Of the 32 fatal cases of whooping-cough outside London, 7 were reported from Birmingham, 4 from Manchester, and 3 from Liverpool. The deaths from diarrhœa showed no increase.

The number of stillbirths registered during the week was 295 in the great towns (corresponding to a rate of 41 per thousand births), including 43 in London.

THE PROCEEDS OF HOSPITAL FÊTES.—During the last eight years, Hendon Cottage Hospital has received £7287 as the proceeds of an annual fête. This year's event resulted in a profit of £1050.

Reviews and Notices of Books.

TRAUMA AND COMPENSATION IN OBSTETRIC AND GYNÆCOLOGICAL CASES.

By DOUGLAS MARSHALL LINDSAY, M.D., F.R.F.P. & S. Glasg., Senior Assistant Visiting Surgeon, Royal Samaritan Hospital, Glasgow. London and Edinburgh: William Hodge and Co., Ltd. 1928. Pp. 172. 7*s.* 6*d.*

THIS book is a useful contribution to a subject either cursorily dismissed or not considered at all in obstetric and gynæcological treatises. Yet, as the author points out, application for damages is very common among women, and real or fancied injury to a pregnancy offers "a good background for the staging of a case before an impressionable jury." The number of cases quoted from Dr. Lindsay's own experience serves to show both the frequency of claims of this kind and the solid foundation of practical knowledge on which this book is built. The instructions as to methods of examination, the way to record findings, and the precautions to be taken when giving an opinion are excellent.

Concerned, as it is, with a very special side of obstetric and gynæcological practice, this book may not appear to be of general interest, but even a superficial glance reveals many points that have a much wider application than its title suggests. It contains, for example, an excellent review of the diagnosis of pregnancy in which the various symptoms and signs are weighed and the value appraised of those that are of use in estimating the stage that the pregnancy has reached, and in determining the life or death of the fœtus in utero. One sign in the diagnosis of pregnancy, that form of external ballottement known as "dipping" has been overlooked. To many it is the most certain and quickest method of differentiating the pregnant uterus from other cystic swellings at or about the umbilical level and before fœtal parts can be distinctly recognised.

Dr. Lindsay makes a very definite statement that trauma is never a causative factor in the production of a neoplasm; his views on this question are diametrically opposed to those expressed by Dr. Janet Lane-Claypon in regard to injury as an ætiological factor in mammary carcinoma (Ministry of Health Report No. 32). Sarcoma of bone appearing after injury he regards as "having probably been the precursor of the fracture." Whilst refusing to consider a traumatic cause for pelvic growths, simple or malignant, he gives full consideration to the possibility of their being adversely affected by injury, as by the occurrence of torsion, rupture, necrosis, and infection.

The volume has closed a distinct gap in gynæcological literature, and will be found exceedingly helpful to those who have to make frequent appearances in the law courts to give a medical opinion in those compensation cases or actions for damages in which possible pelvic injury to women is in question. The author's experience in obstetrics and gynæcology, and as assistant to the Professor of Medical Jurisprudence in Glasgow, makes his advice of particular value in such cases.

EXPERIMENTAL EMBRYOLOGY.

By THOMAS HUNT MORGAN, Professor of Experimental Embryology in Columbia University. New York: Columbia University Press. 1927. Pp. 766. 37*s.* 6*d.*

THE introduction of experimental methods, chemical, physical, and physiological, into embryology is an important development. Although such methods have been applied for over 40 years by a few scattered workers and have yielded fruitful results, these results have so infrequently been brougl the general notice that those not intimately fan with the work have difficulty in correlating them in appreciating their full significance. Prof. Mor book, which is a complete and critical surve the important experimental researches, wil welcomed. Moreover, it will appeal to a section of scientific workers than did the embryology books, which described the buildin of evidence in a chain of pictures revealed by microscope. The experimentalists have called play methods more proper to the chemical and t physiological laboratories. This change of ou has revealed new lines of attack on the prol presented by each stage in the complicated proce development. The changes which take plac the process of fertilisation of the egg are vast complex. Already the amount of fruitful ex mental research relating to that incident a including the questions of the activity, chemo and agglutination of spermatozoa, the fertilisa membrane and its functions, selective fertilisa cross-fertilisation, and polyspermy, exhausts chapters, or over 100 pages of the book.

The remaining six hundred odd pages are occ with the questions involved in the change cytoplasm prior to cleavage of the cell, and in movements of groups of cells following clea Such matters as growth, reflex actions, and tropl movements of larvæ, sex determination, embr grafting, the influence of environment on the dev ment of the embryo, and the source of energ development, are promised for a future volume. investigations relating to each section are rec more or less in their chronological order. The aut conclusions, which are restrained and conservativ inserted into the text at intervals none too freq His obvious reluctance to introduce specul matter might indeed have been modified to extent of furnishing short summaries at the e each section, for an historical account of such co work must necessarily in places be disjointed, c for effort on the part of any reader anxious to u stand the trend and significance of the pro made. However, since Prof. Morgan provides 2000 references to works on experimental embry and sets forth concisely and lucidly a descri of practically every important piece of work has been done on the subject, no one need comp

To workers in every branch of biology wh seeking for a new line of research this book sl provide a mine of inspiring suggestions.

ENDOCRINE DISEASES.

Endokrine Krankheiten. By Prof. Dr. CURSCHMANN, Direktor der medizinischen versitätsklinik zu Rostock I.M. Dresden Leipzig: Theodor Steinkopf. 1927. Pp. R.M.8.5.

THE series of monographs to which this vo belongs is designed to give a practical survey o various domains of medicine. Prof. Curschm Endocrine Diseases can claim to have fulfilled object. Controversial matter has been almost en ignored, and where theoretical interpretation is far from clear the author has contented hi with giving the facts and a short allusion t difficulties. No condition associated with di of the endocrine system seems to have been om The method of dealing with any particular gla to give first a short description of its anatomy physiology, then a detailed account of the sympt tology, pathogenesis, prognosis, and treatmer diseases associated with it. Certain rare meta disturbances of uncertain origin are included. instance, a section is devoted to what is te endogenous cachexia. This condition is conc as the clinical antithesis to endogenous obesity. author differentiates it from a masked hyperthy

, in which there are no eye or circulatory dis-
ances, and from wasting of hypophyseal origin
nmond's disease). The metabolic rate is not
ed nor is the protein metabolism increased, as in
ves's disease, and yet there occurs a progressive
in weight until the patient becomes a veritable
eton. The author claims that by psycho-
apeutic measures the appetite of these cases can
o stimulated that the weight increases. By doses
nsulin up to 20 units daily weight can also be made
ncrease, but the writer denies that the condition
n any sense of the word a "hypo-insulinism." In
v of the most recent work on mongolism it is
nge to find this condition included in this mono-
h; indeed, the author himself, having described
malformation, concludes that there is no evidence
n endocrine dyscrasia. An interesting point in
treatment of exophthalmic goitre is emphasised—
importance of diet. This is a revival of the old
v of Blum that the diet should consist of foods
aining a minimum of tryptophane, which is the
nical basis of thyroxin. Meats, milk, cheese,
s, and wheat are rich, whilst maize, rye, potatoes,
fruits are poor in this substance. However,
e one of the main objects of treatment is to
stablish nitrogen equilibrium in the exophthalmic
ent, it would not be very easy to avoid those
is which are here condemned.
he section on diseases of the sex glands has been
ten by Dr. F. Prange and is well illustrated.
space allotted to details of treatment in this
k is rather scanty, but the general principles
h should guide the management of the patient
made clear.

: CLINICAL EXAMINATION OF THE LUNGS.

Second edition. By E. M. BROCKBANK, M.D. Vict., F.R.C.P.; and ALBERT RAMSBOTTOM, M.D. Vict., F.R.C.P. London: H. K. Lewis and Co., Ltd. 1928. Pp. 112. 5*s*.

HIS book was written for students, and is intended
utline the methods of examining the chest. It is
sufficiently detailed to appeal to the post-graduate
lent, who would require more detail. After a
f chapter on physiology and anatomy, five
pters are given up to a discussion of the symptoms
physical signs of pulmonary disease, the authors
owing the orthodox order of inspection, palpation,
ussion, and auscultation. The last chapter deals
physical signs of common pulmonary diseases,
this is too sketchy to be of real value even to
lents. Very little space is devoted to each
ase, such a variegated condition as new growth
ediastinum, lung, and pleura being dismissed in
lines. The reader is told that X ray examination
useful aid to diagnosis in various conditions,
it is not made clear in what way it may help.
he end of the book are eight X ray plates illus-
ing a normal chest and various pathological
litions. If the volume is regarded as a con-
ent and clear, but not exhaustive, account of
sical signs and symptoms in diseases of the chest
ill prove a useful addition to the students' library.

TERIOLOGY.

Handbuch der Pathogenen Mikroorganismen. Third
dition. Edited by KOLLE and WASSERMANN.
Revised and enlarged with the assistance of
W. KOLLE, R. KRAUS, and P. UHLENHUTH. Jena:
Gustav Fischer; Berlin and Vienna: Urban and
Schwarzenberg. 1928.

HE new edition of Kolle and Wassermann's well-
wn text-book upon bacteriology is now in process
aking its appearance in instalments; up to the
ent time 12 parts have been received, repre-
ing portions of the ten volumes of which the
k will ultimately consist, none of which has yet
eared in its entirety. The wealth of detail is
ter than that given in any other work on
eriology with which we are acquainted; the article on plague, to take a single example, by Dieudonné and Otto, occupies 223 pages and is superbly illustrated. The work is already firmly established as a mine of information upon all the ramifications of bacteriology and immunity. Amongst the subjects dealt with in the parts which we have received are plague; Asiatic cholera, which comprise the whole of one part, a matter of 178 pages; glanders; rinderpest and other special animal infections; diplococcal infections; and a large part of the subjects of general bacteriology, immunity and serology. When complete the book will form a standard book of reference and, meanwhile, has the advantages of a series of monographs, each contributed by an authority in his own special sphere.

INVESTIGATION OF THE CONCENTRATION OF LACTIC ACID IN BLOOD AND URINE UNDER PHYSIOLOGIC AND PATHOLOGIC CONDITIONS.

By OTTO JERVELL. Acta Medica Scandinavica, Supplementum XXIV. Oslo: Nationaltrykkeriet. 1928. Pp. 135.

THIS book consists of a collection of researches carried out during the last four years by the author, partly at the Physiological Institute of the University of Oslo, and partly at the Oslo Municipal Hospital. It is divided into three parts: the first, an introduction, deals with previous work and methods of analysis, the second with lactic acid under physiological conditions, and the third with the concentration of lactic acid in the blood in various pathological states. In the first part some six pages are devoted to a very brief review of the work, beginning with that of Fletcher and Hopkins in 1907, which deals with the rôle of lactic acid in the metabolism of carbohydrates. Dr. Jervell then proceeds to describe the method used by him for the estimation of lactic acid in blood and urine. In the case of blood, the proteins are first precipitated by tungstic acid, as in Clausen's method, using 2 c.cm. of blood. The glucose, together with a part of the uric acid, is then removed from the filtrate by the use of copper sulphate and calcium hydroxide. The estimation is performed upon the filtrate from this precipitation by Hansen's method, which involves the oxidation of the lactic acid to acetic acid and carbon dioxide by a measured excess of potassium dichromate solution and sulphuric acid. The unused dichromate is afterwards estimated iodimetrically. When lactic acid in urine is being determined, it is necessary first to extract the lactic acid by means of ether, using Clausen's apparatus for this purpose. Tables are given showing that the mean error is approximately 5 per cent. In the second section, the lactic acid concentration of human blood during rest is first investigated. The average value of a series of determinations on four subjects is found to be 27 mg. of lactic acid per 100 c.cm. of blood, the extreme values found being 21 and 31·5 mg. per cent. The difference between the lactic acid figures of fasting subjects and those who have had a breakfast of bread and milk is shown to be negligible. Then follows an investigation of the lactic acid concentration in blood during muscular work, using a cycle-ergometer. In every case muscular exercise produces hyperlactacidæmia, the increase being greater in the first minutes of exercise than later. Large outputs of work (over 1000 kg. meters per minute) bring about a considerable increase of lactic acid concentration in the blood; on resting, this slowly falls off, reaching the normal value again in about half an hour. Mild exercise causes this falling off to be slightly more rapid. The hyperlactacidæma is due to a shortage of oxygen, and the oxygen debt calculated from the lactic acid present is approximately equal to that actually found. The urinary lactic acid after physical exercise may increase to 1 per cent., the excretion in the urine being increased by the administration of alkali.

The author then proceeds to investigate the lactic acid concentration of blood and urine in subjects

where impeded oxygen intake might be supposed to lead to hyperlactacidæmia. Examinations of 29 patients with heart disease, five of which were compensated, are quoted. In compensated heart disease the lactic acid concentration of the blood is normal, but it is frequently increased in cardiac insufficiency. In anæmia the lactic acid in the blood is found to be increased in a large proportion of the cases examined. Pneumonia and pulmonary tuberculosis may lead to increased lactic acid concentration in the blood. Fever does not increase the lactic acid content, but in spastic conditions hyperlactacidæmia is observed. In nephritis this is the case only where uræmia is present.

The book would be more readable if the sections had been planned to form a connected story instead of in a form resembling a series of publications in a scientific journal, but it represents a large amount of interesting work. A well-selected bibliography is included at the end of the volume.

DENTAL PROSTHETIC MECHANICS.

By D. M. SHAW, Curator of the Prosthetic Laboratories, Royal Dental Hospital of London. London: Edward Arnold. 1927. Pp. 373. 21*s*.

THIS book has been written for the dental student and for the laboratory mechanic, and the author expresses a diffident hope that it will interest the dentist as well. He rates his book too modestly. This is a most stimulating and original treatise on practical dental prosthesis. Mr. Shaw has had a wide experience as a teacher, and has also been active in research which has attracted attention from dentists and anatomists. He has not attempted to give a formal account of the steps in the construction of a denture, but rather to consider the various aspects of dental prosthesis and to comment on the underlying chemical, physical, and anatomical principles involved. This leads him into a consideration of many difficult problems which demand the close attention of the reader, but he does not neglect to mention practical tips which the laboratory worker will find useful. His views are not always orthodox, and the dentists who have given special study to dental prosthesis may find themselves in conflict with some of them; but they will not find it easy to dispose of his arguments. Among the sections to be singled out for special praise are those on the setting up of artificial teeth, articulators and metal-plate work. The preliminary chapter on the arrangements of the natural teeth is a useful contribution to an aspect of dental anatomy which has not received much attention.

The style in which the book is written is rather involved, and it is sometimes difficult to follow Mr. Shaw's meaning, but the effort is worth making, for the book shows real originality. It is well illustrated and excellently produced.

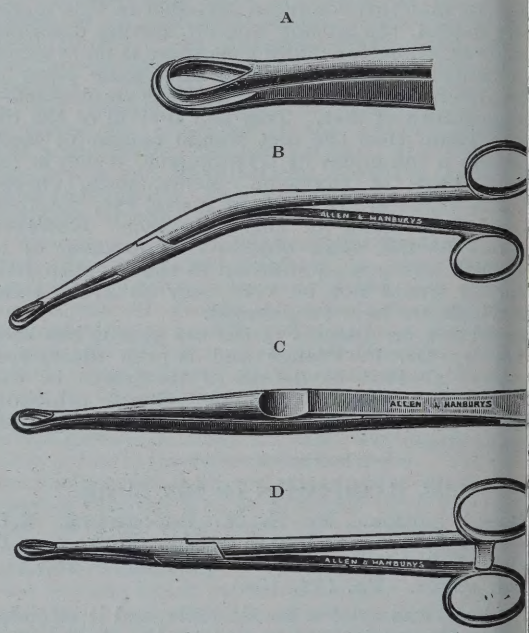
JOURNALS.

MEDICAL WOMEN'S INTERNATIONAL JOURNAL.—The May issue (Vol. I., No. 6) is given up entirely to the proceedings of the open meeting of the Medical Women's International Association held at Bologna from April 11th to 14th last. Summaries are given of all the 34 papers on the two subjects selected for discussion—viz.: (1) medical measures for the protection of children in various countries; and (2) diseases of the eye in relation to general medicine. The abstracts are printed in English or French, the journal being reluctantly restricted to these two languages on financial grounds. It is understood, however, that the Italian association of medical women is bringing out its own report of the proceedings, and the German association publishes its own monthly journal. The papers, even in summary, are well worth careful study, and it is a pleasant surprise to find an example of an international journal which does not contain typographical errors.

New Inventions.

IMPROVED FORCEPS.

SOME years ago when working out an instrum for holding that very friable organ, the tonsil, du dissection, I designed a grip which I believe to both new and of a fairly wide application in surg Its principle is to produce a ruck in the mate grasped by its blunt overlapping jaws (A), muc the way of the Army Regulation fastener for webl



straps. It is obvious that a grip of this sort will out less easily in flimsy material than one depends for its hold on piercing or crushing. original tonsil forceps (B) proved so popular th have had two other models made—a tissue forceps which is very useful for holding tuberculous gla cyst walls, and other "washy" tissues, and a b forceps (D) which I think will grip intestine r firmly and with less damage than anything el have ever tried.

The forceps are made by Messrs. Allen Hanburys, 48, Wigmore-street, W.

DENIS BROWNE, F.R.C.S. En

Reports and Analytical Recor

EUROSPA.

(S. R. TOOGOOD, 173, KING'S-ROAD, HARROGATE.)

EUROSPA is a cream-coloured powder which cl to possess the curative properties of the salts conta in the natural medicinal waters of Harrogate, B Wiesbaden, and Vichy. On analysis, the follo results were obtained:—

Moisture	6·10	per cent.
Matter, insoluble in water ..	9·16	,,
Matter, soluble in water ..	84·74	,,

The insoluble matter consisted of magnes phosphate and a little sulphur. The soluble ma comprised sodium sulphate (37 per cent.), magnes sulphate (16 per cent.), small amounts of potass salts, tartrates, and citrates, and traces of lithium chlorides. The sulphur (2·5 per cent.) probabl present as "potassa sulphurata." When dissolve water the solution was slightly alkaline and ha distinct odour of sulphuretted hydrogen.

THE LANCET.

ONDON: SATURDAY, AUGUST 18, 1928.

DETENTION OF MENTAL PATIENTS.

mental disease may be no more than transient, obviously wrong to begin its treatment by ıg steps which will permanently damage a nt's chances in the struggle for existence. yone agrees, therefore, that certification should last resort rather than the normal preliminary ental care, and the Royal Commission on Lunacy osed a form of machinery designed to give this iple effect. They recommended that cases iring institutional treatment should be differently ıged, according to whether the patients were untary" or "involuntary," and the medical ssion has cordially accepted their suggestion "voluntary boarders" should be admitted into al hospitals, licensed houses, nursing homes and e care on the strength of their written application. ıssion continues on the question whether such an cation justifies detention of a patient who objects e treatment, but for the moment our object is raw attention rather to the conditions under h he can in the first place be regarded as untary." The proportion of mental patients are ready to accept treatment is none too large, by the Commission's plan only these would be cted from legal intervention. It is true that intended reforms would permit of a modified of certification in cases where recovery is cted within six months, for if the prognosis is a patient would be treated under a Provisional tment Order without actual certification. But such an Order to be given the signature of a strate would be required, and it is far from asonable to argue that it is this intervention legal officer, with its attendant publicity, that ers the social stigma of insanity. Bearing this ınd, the Representative Body of the British cal Association, as we recorded on p. 240 of ssue of August 4th, reached the conclusion that Commissioners' reforms do not go far enough, gave its approval to an alternative plan, vhich the law's intervention would be reserved ases in which the patient, though capable of ion, definitely refused or resisted institutional ment. Under a scheme of this kind the luntary" boarders would include all those who e no categorical objection to being so declared, this would undoubtedly increase the number of le who would receive institutional care without ng been certified. Furthermore, the knowledge treatment could be got on these terms would urage the friends and relatives of a patient to him properly looked after at an early stage.

From the medical standpoint, therefore, the Association's proposal has much to recommend it; but there are certain obstacles to its being adopted. In the first place it may be observed that though reform of our lunacy law is inevitable, the prospect of it is by no means immediate. Sir FREDERICK WILLIS, lately chairman of the Board of Control, not long ago described the efforts of the Board to obtain amendment of the Lunacy Acts, and attributed their failure to a public apathy which refuses to be disturbed. The only noticeable symptom of any change in this attitude has been alarm at the restriction of liberty which the law already allows. This manifestation has taken the form of awarding fanciful damages against medical practitioners on the alleged ground of negligence in certification, and its result has been to make administration of the law more difficult, so that we approach a deadlock. What, then, will be the attitude of the public towards the British Medical Association's suggestion that a patient should be admitted to an institution without his consent, merely "on an 'Authorisation for Treatment' given by a relative or friend and supported by a 'recommendation' signed by two medical practitioners"? Will they not regard this as evidence of a desire on the part of medical men to be given powers altogether outside their proper province? Will they not think of it as another and flagrant attempt to strengthen the grip of the profession on mankind? The liberty of the subject is a national ideal, and one which no law reformer is likely or anxious to ignore. Though the law, in varying degrees at various stages of its history, has regarded the lunatic, the married woman and the infant as not fully capable of legal rights, Parliament would hardly dare to-day to decree that any of these classes of persons should be compulsorily detained in the absence of judicial proceedings.

One aspect of this proposal deserves more thought, perhaps, than it has yet received. If mental patients are to be placed in institutions without their express consent, on the decision of a relative or friend, recommended by two doctors, an unavoidable responsibility is bound to fall on the medical men concerned. Civil actions would certainly be brought against them from time to time, and it would not be at all surprising if lay juries were to make the most of these opportunities of registering a natural dislike of iatrarchy, or government by doctors. The profession is at the moment averse from increasing the number of vulnerable areas in its own skin, and is, indeed, anxious to disclaim a good deal of the responsibility placed upon it under the present Lunacy Acts. It is increasingly felt, moreover, that the further protection, which (to quote the Royal Commission) "should be given to medical men in the discharge of their professional duties in relation to insanity," can best be obtained by putting more of the onus of certification upon the representatives of the law rather than by taking it away from these officials. While no practitioner would wish to escape his proper liability to take due care, the British Medical Association's Representative Body has itself approved the principle that "the judicial authority, when it intervenes, shall accept responsibility for the detention of persons of unsound mind." And, oddly enough, this attempt to minimise medical responsibility is more likely to win public approval than the Association's plan for minimising legal intervention; though the former is made purely in the interest of the profession, whilst the latter is designed entirely for the benefit of mental patients.

RECENT FOOD INFECTIONS.

LONDON and the home counties have been unpleasantly aware, during the last week or two, of the prevalence of an infectious fever of the enteric group, some 90 cases being under treatment in the M.A.B. hospitals on August 14th. The disease has shown no respect for age or class, and has not been localised to any one area, although certain districts such as Kensington and Epsom have furnished most of the cases. On the whole the symptoms have been mild, the chief being headache and fever. In the average case there has been no vomiting and no diarrhœa, but rather constipation; the majority have shown rose spots in abundance, and a slightly enlarged spleen. Though a few cases have been severe and one death has been reported from Epsom, the outbreak cannot be regarded as really alarming. The organism responsible is *paratyphosus-B*, distributed it is presumed by food; while no particular comestible can as yet be definitely incriminated, cream is under grave suspicion. Since the beginning of the year it has not been permissible to add preservatives to cream and the suggestion has been made in many newspapers that there is some connexion between this prohibition and the present outbreak of infectious fever. A priori this is unlikely, for it has been shown that the maximum addition of boric acid heretofore customary—namely, 0·4 per cent.—has no effect on the growth or vitality of the paratyphoid bacillus, and that five times the quantity is needed to exert any restraint on the organism. It should be borne in mind, also, that in the ordinary course of events paratyphoid organisms in cream originate from the organisms in the raw milk from which the cream was derived. If it were true that they are commonly present in cream, but have hitherto been rendered innocuous by boric acid, then it would be difficult to explain why no milk-borne epidemic of paratyphoid has been recorded in recent years, for no preservatives have been tolerated in milk itself since 1912. This is not to say, of course, that cream, like other foods, may not be accidentally contaminated after separation. Five years ago a big epidemic owed its origin to ice-cream which had been cooled in filthy surroundings.

The paratyphoid outbreak has been confused in the public mind with a group of cases of food-poisoning among the London police force, leading to the death of a constable. But although they were coincident in time the two epidemics were fundamentally different in nature. The usual symptoms of infection with so-called food-poisoning bacilli are vomiting and diarrhœa, the excreta often being blood-stained. There is evidence of intense toxæmia, and the rapid onset, perhaps with prostration, is in marked contrast with the slow and mild development of illness due to paratyphoid-B. Acute enteritis following the ingestion of food used to be described as "ptomaine poisoning," when it was supposed that the symptoms were due to substances produced by the decomposition of proteins, but it is now recognised that the symptoms are due to the multiplication of organisms of the food-poisoning group within the intestine, and in severe cases within the blood stream. The food-poisoning bacilli occurring in preserved meats such as sausages, pies, and the like, may have come from an infected cow or pig, or from subsequent contamination of healthy meat. The meat or food may not present any unusual features either to the taste or smell, although there can often be isolated from it an organism identical with that obtained from the sick individual.

All these infecting agents, paratyphoid bacilli the food-poisoning organisms alike, however diffe may be their results clinically and epidemiologic are closely related and belong to the salmo group, which comprises a number of organ which cannot be distinguished from one ano under the microscope. Their biochemical chara are also similar and separation of member fermentation tests is not possible. They d in their serological relations, but even here the g relationship between certain types may be so as to demand complicated methods, such as ag tinin-absorption tests for their identification. the three types of paratyphoid bacilli, "A" does occur in this country, "C" is met with occasion while "B" infections are common, and in re years have assumed a greater relative import than typhoid fever. The food-poisoning b comprise: The *B. enteritidis* of Gaertner, which found in the recent police cases, and the *B. aertr* the commonest food-poisoner in this country which at least four types have been descri All these agree in the essential characteristics t (1) they multiply in food with great rapidity, e cially during warm weather; (2) during their gro in food they produce no physical changes vi to the naked eye; and (3) the toxins produced highly resistant to heat.

EXPERIMENTAL DENTAL CLINICS.

IT is generally agreed that in schools and indus enterprises the dental clinic has proved its worth, the Minister of Health has taken power, under Amending Act, to set up a number of experime clinics for dental treatment under the National He Insurance scheme. This experiment has a signific both for medical and dental practitioners, since t interests under the Acts are closely related.

The amount of dental additional benefit distrib has steadily increased during two valuation peri but it seems certain that its present partial and ditional application will extend over the perio the third valuation which is approaching. Notw standing the fact that nearly £2,000,000 per an is available for the purpose, the present schem far from covering the entire field. All insured per are not yet entitled to the benefit; those who eligible are called upon to pay a large proportio the cost of treatment, and none can claim it du those important years of adolescence from 16 t years of age. If we ignore these serious deficien it must be admitted that the scheme has been lar successful. A satisfactory system of dental ser has been evolved and maintained on a volun basis, and this is especially noteworthy becaus the original Act there was little provision for r lating the administration of additional bene and consequently the conditions of service—inclu the delicate matter of remuneration—had to negotiated by conference between representat of the dental profession and of approved soci in an atmosphere of imperfect mutual confide As it now stands the scheme is applicable to Engl Scotland, and Wales. It is managed by a De Benefit Joint Committee consisting of equal num of dentists and approved society representatives, v subsidiary committees for interpretation, investiga of disputes and for appeals; there is a Regional De Officer service, and there is even a disciplin tribunal consisting of a barrister and two de assessors. No panel in the medical sense is at pre

existence, but there has been no difficulty in curing the necessary service, the insured person being permitted to consult any dentist who is prepared to give the treatment on the agreed conditions.[1] A few approved societies have caused trouble by refusing to take part in the scheme, and their efforts to secure treatment for their members at fees lower than those of the agreed scale have had a disturbing effect. There have also been the inevitable clashes caused by lay officials who considered that control of the funds gave them the right to interfere with the professional discretion of the dentists. The latter, on their part, have occasionally shown an unfortunate sensitiveness as well as a somewhat irritating tendency to ignore agreed conditions. But, on the whole, the method of giving treatment through the agency of private dental practitioners seems to have justified itself, and this method is likely to remain the chief means for administering this important benefit. The demand for dental clinics was thus no warrant in any failure of the present system.

By no means new, the suggestion that clinics should be established was familiar to those who had to deal with the approved societies during the first valuation period, when it was put forward by certain officials with the frank intention of getting more effective control over the dentists they wished to employ. The idea was to place one or more dentists in operating rooms in proximity to the offices of the approved society, which would itself settle conditions of service, supervision, and remuneration; in short, it was desired to apply to dental insurance practice the methods of the pre-insurance "medical club" system. When later, on the constitution of the present Dental Benefit Joint Committee, the Minister of Health asked the Committee to inquire into "the possibility of the institution of clinics for dental treatment in particular areas and the desirability of encouraging steps to this end on the part of the dental profession," the earlier attitude towards the clinic question was largely abandoned, and stress was laid on the necessity for obtaining for insured persons a uniform standard of dental treatment in return for the payment of a uniform scale of fees. Attention was drawn to the advantages of large establishments, fitted with equipment and apparatus for special forms of diagnosis and treatment, and having facilities for team-work such as were not generally available in private surgeries; the clinic, it was expected, would also act as a propagandist centre for dental hygiene. The setting-up of such institutions is, however, only possible in populous areas, and preliminary inquiries on initial cost and running expenses do not encourage the idea that the present cost of treatment would be materially reduced. Nevertheless it is clear that clinics might play a useful though limited part in the future treatment of insured persons, and the assurances about their control, given by the Minister, and the actual embodiment in the Amending Act of the principle of free choice of dentist, have gone a long way towards reconciling the dental profession to an experiment of which it had been suspicious, as was hardly surprising. It must not be forgotten that the present position of the profession, of whose members only about one-half possess qualifications obtained after recognised courses of study and examination, necessarily results in a certain inequality of service available to those who get their dental treatment under the National Health Insurance scheme. The experimental clinics will test the possibility of providing a high standard of dental treatment in circumstances under which, otherwise, it may not be always available. If insured persons, of their own choice, attend them in sufficient numbers, and if the treatment given in the clinics is maintained at the level of excellence which is contemplated, their establishment will be justified from the standpoint of public health, and, in any case, the experiment, with all its results made freely available to interested parties, cannot fail to be useful.

[1] These are set out, together with full information on the working of the scheme, in a Dental Benefit Handbook compiled by the Dental Benefit Joint Committee and obtainable from H.M. Stationery Office at a nominal cost.

NON-PULMONARY TUBERCULOSIS.

SEVERAL important issues are raised in the papers in our present issue, by Mr. J. T. MORRISON on human and bovine types of tuberculosis in man, and by Dr. C. O. STALLYBRASS on the sources of infection. Both deal with non-pulmonary tuberculosis, a type of the disease which is all too often neglected in discussions on infectivity. Mr. MORRISON'S inquiry concerns the effects of inoculating guinea-pigs with material from tuberculous lesions, with a view to correlating clinical and bacteriological findings, and in almost one-third of the cases he found that this test was negative. For various reasons it is considered that failure to produce tuberculosis in the experimental animal was not due to the paucity of organisms, nor to a high state of immunity as reflected in the clinical course of the patient's illness; but rather to local conditions, such as the presence of fibrosis in the lesion from which the material was obtained. This view was supported by the long history of some of the cases, and seems by no means unreasonable, since it is well recognised that fibrotic and calcified foci are least likely to yield tubercle bacilli on animal inoculation. It would be a valuable aid to the elucidation of this point if material were inoculated from different portions of the lesions and at different times in the history of the same patient—i.e., in the early active stages and again in the later quiescent stages. An investigation into the human and bovine origin of these cases showed that failure to induce tuberculosis in the guinea-pig was as common with the one type of bacillus as with the other, so that the question of the relative toxicity of the two types of bacillus for the guinea-pig was apparently not considered to require investigation.

Mr. MORRISON raises a number of other questions on the regional distribution and clinical condition of the bovine and human groups. Tuberculous glands of the neck were found to be of bovine origin in 75 per cent. of cases, whilst the bovine bacillus was only responsible for 28 per cent. of the bone cases. These figures emphasise the need for a much more careful geographical survey of both bovine and human tuberculosis. Why, for instance, should Edinburgh have a high percentage of bovine lesions? Again, why should Jarrow, as shown by recent statistics, have a markedly higher total tuberculous incidence than Tyneside in general? Average figures for the country as a whole are of course of the utmost value, but there is some danger in assuming that they are necessarily typical of local conditions, and in so doing a remedial local factor may be overlooked. Statistics, moreover, do not remain of permanent value. Are we not in danger of making false deductions, for instance, from figures of positive findings of tubercle bacilli recorded in milk and butter in periods before the war? Every generation ought to make its own investigation afresh.

There is need, too, in the case of bovine tuberculosis for a regional survey of dairies and milk supplies, and we believe that such a survey might show that the bovine bacillus is not so widely distributed as was at one time believed. On the clinical side Mr. MORRISON'S inquiry shows that the history of onset of the disease was earlier in the bovine than in the human bacillus series. This again is important. It is likely that younger children, drinking more milk, are more prone to bovine infection than older children, but we have been led to believe of late that the human type of infection is also contracted during early years. Mr. MORRISON'S figures do not quite bear this out as far as non-pulmonary tuberculosis is concerned. A study of family history and an inquiry into possible portals of entry were not very successful as a guide to bovine versus human infection, but the results of treatment in the two types of case were remarkable. In all the bovine cases traced the patients were in good health, whereas more than 18 per cent. of the human cases had proved fatal within three years.

Dr. STALLYBRASS, also dealing with Liverpool cases, gives the results of inquiries into 4469 non-pulmonary cases of tuberculosis. From his figures it appears that tuberculosis of bones and joints is relatively common in patients giving no history of exposure to a human source of infection, whereas meningeal and abdominal tuberculosis—and to a less extent tuberculosis of peripheral glands—was in excess in those giving such a history. These deductions have to be somewhat modified for children, but, broadly speaking, Dr. STALLYBRASS thinks there is a direct contradiction between the figures as analysed for exposure or non-exposure to a possible source of human infection, and between the well-known results of bacteriological investigation. We are not so sure that exposure to human infection can be taken as a crucial test of invasion by the human bacillus. The tubercle bacillus is a slow starter, and the race is not always for the swift; the history of human infection may well be overlooked. The significance of certain details of personal history often escapes even the most skilled questioner, whilst the primary case in the household may remain dormant, from the physician's point of view, for many years. Conversely, bovine infection is rarely in evidence. On the whole, therefore, we are inclined to place most reliance on the bacteriological findings, but Mr. MORRISON and Dr. STALLYBRASS have raised many interesting questions, and are to be congratulated on exploring the field of non-pulmonary tuberculosis as against the pulmonary type of the disease. Far too little original work has been done of late years in this field, and it may well be that investigation of this kind will open up new views on the prevention of tuberculosis, particularly as regards contacts, disinfection, the milk problem, and the like. A large proportion of our national health budget is devoted to tuberculosis, and the elucidation of these questions may result in saving of money.

DONATIONS AND BEQUESTS.—The late Viscount Hambleden, among other bequests, left £5000 to King's College Hospital.—Mr. E. F. Goulburn, of Southport, left, subject to his wife's interest, £2000 to the Victoria University of Manchester to be applied for research purposes in connexion with megrim as affecting humanity, and £500 to Manchester and Salford Playing Fields Association.—Mr. Evan Lewis, Swansea, left £1000 to the Swansea General Hospital, to endow a bed.—Mr. W. R. Morris, head of the firm of Motor-car manufacturers at Oxford, and President of the Infirmary, has promised a gift of £38,000 for the extension of the Radcliffe Infirmary, Oxford. The gift will be used for the building of a new maternity home.—Mr. Tom Jackson, of Heaton, Bolton, left £1000 each to General Fund of the Victoria University, Manchester, the Bolton District Nursing Association, Dr. Barnardo's Homes, and the London Missionary Society.—Mr. Ernest George Wragg, of Ranmoor, Sheffield, left £1000 to the Jessop Hospital for Women to endow a bed in memory of his wife, £1000 to the Rotherham Hospital for the endowment of a bed in memory of his parents, and £500 to the Sheffield Children's Hospital for the endowment of the "William" cot.

Annotations.

"Ne quid nimis."

HEALTH HAZARDS IN INDUSTRY.

RECOGNITION is given in the United States to t social importance of the Registrar-General's Decenn Supplement dealing with Occupational Mortalit by the devotion of a whole Public Health Repo to a summary of its facts and deductions. We a thus afforded an opportunity of knowing how oth regard the data and their presentation. Ameri possesses no comparable material—nor, indeed, h any other country; and turns with avidity to o occupational mortality-rates as being exceptiona suggestive. The social distribution of mortalit portraying the influence of financial standing up disease, has little appeal to the United States, exce as introducing an element of uncertainty in occupational environment. Possibly a country prosperous as the United States finds even its lowe social class hardly at all hit by the dysgenic influen of penury. The association is noted of such digesti diseases as diabetes and diseases of the liver wi financial capacity for over-indulgence in diete indiscretions. Then attention is devoted to speci occupational comparisons in the search for clues hidden industrial hazards. Here the significance dust as a cause of tuberculosis, especially of sili dust, is stressed. The evidence adduced receiv synchronous support from research just published the Metropolitan Life Insurance Company of N York,[3] wherein the proportion of deaths fro tuberculosis for certain occupations with a sili dust hazard is shown to exceed the average for males: for metalliferous miners by 83 per cent., f pottery workers by 77 per cent., and for stone cutt by 44 per cent. A point is made that where th specific hazard exists there is a tendency for t phthisis mortality to rise steadily with age, and present a form of curve unique for this cause of deat The facts are carefully examined as to mortality d to all other respiratory diseases. Occupations wi high rates are placed in five groups: one is expos to dusts; a second to high temperatures—e. furnacemen; a third to inclement weather—e. dock labourers; a fourth contains rejects from oth trades—e.g., costermongers; and a fifth includes t alcoholics. In this connexion the incomparabili of death-rates in the two countries ascribed to chro bronchitis receives attention. In the United Stat certification of chronic bronchitis is discouraged, that in New York medical certificates stating chro bronchitis as a cause of death are sent back f revision. Hence bronchitis death-rates are usua about one-fourth those in England and Wales; wh cardiac death-rates are proportionately swollen, sin English bronchitis becomes American myocardit Direct occupational risks, however, affect a relativ small group of the working population, while t conditions of life implied by various occupatio exert subtle and pervasive influences on mortali in many indirect ways. The British data a recognised as providing evidence of the existence such influences.

INFLUENCE OF POSTURE ON RENAL FUNCTIO

THE relation of posture to albuminuria in susce tible subjects has long been recognised, and at o time came in for a good deal of investigation, b evidence on the effect of postural changes upon t renal function is still scanty. Exactly a quarter of

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[1] Registrar-General's Decennial Supplement, England a Wales, 1921, Part II., Occupational Mortality, Fertility, a Infant Mortality. H.M. Stationery Office. 1927.

[2] Public Health Report, No. 25, vol. xliii, June 22nd, 19 Washington.

[3] Deaths from Tuberculosis in Dusty Trades. Statisti Bulletin, Metropolitan Life Insurance Co., vol. ix., No. June, 1928.

ury ago Linnoisier and Lemoine, using the hods then in vogue, adduced good evidence of ncrease in the activity of the kidney when the y was recumbent, but in spite of the development new methods of investigating the renal func- their results seem to have gone unconfirmed. Cordero and M. H. Friedman,[1] working in the siological Laboratories of the University of ago, have now reinvestigated the question, using ns of the phenolsulphonephthalein test of Rowntree Geraghty. They employed two normal subjects their experiments, which extended over seven ths, and their results show clearly a diminution xcretion of the dye in the upright and an increase he recumbent position. They were further able demonstrate corresponding alterations in the tion of water. A large body of evidence goes to v that the excretion of phenolsulphonephthalein s parallel to that of nitrogenous bodies in the e; Linnoisier and Lemoine demonstrated a ease in chloride excretion in the upright position an increase in the recumbent. In view of all these s the assumption seems fully justified that the mbent position favours, while the upright bits, renal activity. The why and wherefore of phenomenon remains as obscure as it was when noisier and Lemoine[2] originally produced the ory of torsion of the renal pedicle resulting from t posture. The American investigators suggest t increased urinary excretion in the recumbent tion may be due to increase of the capillary bed, ught about by vascular dilatation. Such a dila- on may depend not only on the recumbency, also on the general toning-down of nervous vity, such as precedes sleep. In support of this y adduce the fact that in one of their subjects, was of a nervous and excitable disposition, the uence of change of posture was less than in the other se nature was more phlegmatic.

E BROAD TAPEWORM IN NORTH AMERICA.

T was predicted over 30 years ago that *Diphyllo- rium latum* would become endemic in the upper insula of Michigan, seeing that its population tained immigrants who retained their Baltic habit ating uncooked fish, fresh, dried, smoked, or cured. prediction has proved correct, and T. Vergeer[3] has n investigating the steps by which this established ction is being maintained. Pike are almost ly implicated as the second intermediate host, t directly concerned in infecting man. They are he main migratory, passing from the Great Lakes the rivers to spawn, and in this way reaching tage Lake in the Michigan Peninsula, the spot re infection is greatest. One infected fish has n caught in Lake Superior, 20 miles from the mouth the Portage Canal, a distance which marks the it of the area investigated, so far as Lake Superior oncerned. The local crustacean intermediary has been determined. That the matter may come to e a more than local interest is suggested by the tement that 7,000,000 pounds of pike belonging to species which are locally infected were imported the United States from Canada in 1924, the last r for which figures are available, mostly fresh and rozen. It is concluded that it is necessary that se imported fish should be thoroughly examined the plerocercoids of *D. latum*. Knowledge of the ent, if any, to which they are infected would be uable, but if a complete food inspection is implied, s would probably be incompatible with the con- uance of the trade. Nor does there seem any tification for its institution in present circum- nces, seeing that the human infestation is definitely ociated with peculiar habits introduced by immi- nts of certain nationalities, that it is reported as limited to the area where these habits exist, and that within that area, it is, in the experience of those in local medical practice, less common than it was 20 years ago. It is significant that all the pike, some 30, examined from Lakes Erie and Douglas, were free from plerocercoids of this cestode.

[1] Arch. Int. Med., 1928, xli., 279.
[2] R. Soc. de Biol., 1903, xlv., 466 and 605, and xlviii., 691.
[3] Jour. Amer. Med. Assoc., 1928, xc., 673.

RACIAL VARIATION IN THE SIZE OF RED BLOOD CELLS.

IT has generally been accepted that on the average the red cells of all the races of mankind are of the same size, but actual evidence of this has been wanting. Credit is therefore due to Dr. N. G. Winschnewsky[1] for adducing facts in support of this view. He has examined the red cells of 195 people of various races, all of whom had been domiciled for some months in Moscow, and he has found that the average size of the red cells in members of all the races tested falls within the accepted limits of normality. The extreme measurements of the diameter in the individuals examined were 6·64 μ and 7·83 μ, whilst for the different racial groups they were 7·14 μ and 7·34 μ. So far as it goes, this suggests that there is no appreciable difference between the dimensions of the red cells in individuals of different races living under the same conditions.

ACID DRINKS AND ENAMELLED VESSELS.

A FULL account of an interesting but rather alarming outbreak of sickness, which received some notice in the daily press, is given by Dr. J. A. Charles, assistant medical officer of health for Newcastle-upon-Tyne, in the current *Medical Officer*. Fortunately the investigation which followed the outbreak left no grounds of doubt as to the cause or as to the means of avoiding the possibility of similar occurrences.

A firm employing about 500 people were desirous, during the recent hot weather, of adding to the comfort of their employees by providing iced lemonade for their consumption. The "lemonade," like much of the drink provided under that name, was free from the characteristic acid of the lemon and its allies, citric acid; its place being taken by the usual substitute, tartaric acid. It is to the credit of the makers of the powder used that they called it "fruit crystals," and did not use any word suggesting that it was derived from lemons. The report of Dr. J. T. Dunn, who was called in to make an analytical investigation, showed that this was a perfectly harmless preparation, although a hasty test at the hospital, made when the first cases were brought in, led to the sufferers being treated for oxalic acid poisoning. An investigation of the circumstances attending the outbreak, which was rapid, both in the onset and the recovery of all the 70 odd persons attacked, showed that the crystals were dissolved in boiling water overnight in enamelled buckets obtained specially for the occasion, and extra sugar, over and above that in the crystals, added, with ice, in the morning. It may be noted, as having some small bearing on the case, that the amount of crystals used gave a solution of approximately double the strength of a liquid made strictly according to the makers' formula. Examination of the containing vessels, after the outbreak, showed that the enamel, where it had come in contact with the liquid, had lost its glazed appearance and that disintegrated enamel could easily be removed by rubbing with the finger. All the 12 buckets used were similarly affected, but a large metal bath in which a reserve supply was prepared and stored was not so attacked. Dr. Dunn found that the enamel of the pails contained antimony oxide equivalent to 5 per cent. of metallic antimony. This is by no means an unusual constituent of enamel glazes, and when vessels are intended for cooking the composition of the glaze

[1] Russian Jour. Trop. Med., 1928, vi., 141 (Abs.).

is usually so adjusted that the ordinary acid solutions likely to be used in culinary operations only remove inappreciable amounts of antimony in cases where that element is a constituent of the glaze. Antimony was also found in the "lemonade" taken from the pails. Owing to an oversight the liquid from the bath, which it was found was not enamelled with a fritted glaze, but had been painted with zinc white in linseed oil, was not examined, and it is not certain that any of the liquid in this was consumed, although at first there was an impression that those who drank only from this supply were not attacked by sickness. The lemonade from the pails contained 0·013 per cent. of metallic antimony. This, as Dr. Dunn points out, would represent in an ordinary 10 oz. tumbler gr. 0·57 of antimony, or gr. 1·52 of tartar emetic, whilst the emetic dose given in the British Pharmacopœia is gr. 0·5 to 1·0, so that drinking so little as one-third of a tumbler might be expected to cause sickness. No other heavy metals, such as arsenic or lead, were found in the drink, and the circumstances, including the symptoms observed, were all consistent with simple antimony poisoning.

It is unfortunate that so kind and thoughtful an action on the part of the firm concerned should have led to so much pain and inconvenience, but the tale serves to point some morals. Æsthetic and, perhaps, even common-sense considerations seem to suggest hesitation in adapting utensils designed for one purpose to another. The German makers of slop-pails, in glazing their interiors with a rather low-grade antimonial enamel, could hardly have foreseen that in the pioneer country of sanitary science they would be used as containers for beverages. Possibly, having regard to the adaptable character of the Briton, it might be desirable for such vessels, when sold, to bear a label: "not to be used for food or drink." Occurrences of this kind should receive the widest publicity; in fact, there should be some means whereby brief warnings could be compulsorily published in all newspapers. Further, some international standard for food containers might well be considered, as apart from acute visitations of the kind described, it is surely undesirable that the human body should become a receptacle for traces of antimony, tin, lead, arsenic, and other heavy metals. Last week 30 out of 60 of a party of boy scouts and girl guides were suddenly taken ill after having been regaled with cakes and lemonade, and were unable to return to camp until next morning. It is legitimate to wonder whether this outbreak was due to the same cause as the Newcastle one.

THROMBOSIS OF THE SPLENIC VEIN.

THE diagnosis of splenic anæmia is often made in cases which conform only vaguely to what many authorities regard as at best a vague disorder. From the mixed collection of cases grouped together under this name certain examples of thrombosis of the splenic vein have been separated off, principally by Wallgren, whose original paper has already been noticed in our columns.[1] At the discussion on chronic enlargements of the spleen in children, at the British Medical Association's meeting at Cardiff, Dr. Robert Hutchison referred to the occurrence of this condition in children, and described a case of his own; while in a recent article[2] G. Westkott makes a further contribution to the subject. The essential features of these cases of thrombosis of the splenic vein are the occurrence of severe hæmatemesis in association with enlargement of the spleen—which enlargement is less during and immediately after the hæmorrhage—and the absence of any evidence of cirrhosis of the liver or other cause for the symptoms. Westkott had under his care a girl of ten who was admitted with a profound anæmia, due, he believes, to severe infection with the intestinal parasite, *Trichocephalus dispar*. There was a history of hæmatemesis before admission, and a severe repeti of this followed a blood transfusion while she in hospital. Elaborate investigations were car out which excluded other causes of splenic enla ment; the blood count showed a severe second anæmia with very slow gradual improvement, un that following a serious hæmorrhage. In Westko paper the part played by the parasitic infectio discussed at some length, and the relation betw this and the thrombosis of the splenic vein wh was diagnosed is also considered. Operation not performed, so that confirmation of the diagn was not possible. It is believed that thrombosi these cases is probably the result of some infecti although the possibility of its connexion with severe loss of blood by the bowel due to the wo infection has also to be remembered. It may that the primary fault in these cases of splenic anæ is a thrombosed splenic vein, and the splenomeg which follows this may be responsible for the anæ and also for the character of the white cell cou with leucopenia, so frequently found. Westk does not come to any definite conclusions except confirm the idea advanced by Wallgren, that spl vein thrombosis is a clinical entity. The case describes opens up further possibilities as to ætiology of the condition.

[1] THE LANCET, 1927, ii., 823.
[2] Jahrb. f. Kinderheilkunde, June, 1928.

THERAPEUTIC MIRACLES AT HEREFORD.

IN his History of Hereford Cathedral the late Ca Bannister states that, as a general rule, the mira recorded in the "Lives" of mediaeval saints vaguely described and poorly attested. But of th wrought at the tomb of St. Thomas de Cantilup seems that there exists an official account, drawn by six lawyers after investigations made by pa commissioners. Two of these—Ralph Baldo Bishop of London, and the Bishop of Mende—ca to Hereford at the end of August, 1307, and stayed Nov. 16th, *omni die ex industria intuentes ecclesi* Pope John XXII., in the Bull of canonisati declares that 17 miracles were thoroughly investiga and found to be *fidelibus probata testimoniis*. A la proportion of these 17 miracles were cures of cases palsy, but three deal with cases of blindness, Bannister says that the evidence for them is proba better attested than the evidence for marvellous cu at any other shrine. The fifteenth of the se concerns Agnes de la Brok, of the parish of St. Martin Hereford, cured of blindness on the Friday after t octave of Easter, 1287. One witness affirmed t Agnes was well-to-do, so that there was no appar reason for her wishing to make money out of infirmity. Several witnesses deposed that she h not in her blinded eyes, *vulnera, apostema, tumor maculam, vel aegritudionem vel aliquam apparen laesionem*. This seems to have been a case of hysteri blindness. Last in the series of cures come two sm boys, brothers, aged 4 and 5 years respective healed of their blindness, also in 1287. *Mali humo effluebant ex oculis, et aliquando claudebantur palpeb dictorum oculorum: tunc ipsi oculi inflabantur, putredine congregata in eis denuo palpebrae aperiebant* Obviously these were cases of simple catarr ophthalmia. Presumably Agnes and the childr had died or passed out of ken during the 20 ye intervening between their miraculous cures and t official inquiry, or their first-hand testimony wo have been obtained.

Judged by modern standards one feels that t six lawyers who investigated these cures must ha been very easily satisfied, but the inquiry was h upon the findings of papal commissioners, and wh St. Thomas de Cantilupe, recently dead, was at t crest of his fame as a miracle worker. For this sai one of the most celebrated of the Bishops of Herefo died on August 25th, 1282, at Civita Vecchia. He reputed to have been of a saintly disposition, and w certainly steadfast and unyielding in upholding t rights of the See. There is, so far as we are awa

evidence to show that during his life he had any tive connexion with the healing art, but numerous res were reputed to have been wrought at his rine after and before his canonisation. He was cted bishop in 1275, succeeding Peter of Savoy quablanca). He had served as Chancellor of the iversity of Oxford, and as Chancellor of England, der Simon de Montfort. He was stern in his sistance of encroachments on his liberties, upholding s rights in Malvern Chase against Gilbert de Clare, e Red Earl of Gloucester; disputing with Llewellyn Wales and with Lord Clifford, the latter for cattle ting. Lord Clifford performed penance and under- nt a birching in the cathedral. The bishop's most ere wrangle was with his metropolitan, John de ckham, over a question of testamentary jurisdiction. communicated by the Archbishop, he went to Rome d secured from Pope Martin IV. a decree in his our. On his way back he died, as stated above, d was buried in Florence. His bones were separated m the flesh by boiling and brought to Hereford and ced in the cathedral. His old enemy, the Red Earl, ended the ceremony, and at his approach, the iscopal bones were seen to bleed! Forty years er he was canonised. An enormous number of racles resulted. More than 66 dead persons were tored to life. His shrine even acquired a sort of terinary reputation, and Edward I. sent sick falcons be cured at his tomb. The six lawyers, it will be n, were asked to dismiss from their minds an extra- linary amount of influential matter before giving ir verdict.

HEALTH TALKS.

IN the Public Health Section of the British Medical sociation's Cardiff meeting Dr. W. W. Jameson alt with the important and difficult subject of health ucation, particularly welcoming the use of broad- sting as a means to that end. He commended the ggestion recently made in *Public Health* (May, 1928) at the present method of broadcasting once a nth a "health talk" lasting 15 minutes is unlikely serve the cause of education so well as more frequent ur-minute broadcasts on matters of special health erest at the particular moment. He also spoke of agreement which had been reached with the neral Medical Council in regard to the publication health articles in the daily press, in which connexion eading newspaper reported him as follows:—

"It was now accepted that such articles should be sub- ted to the Chief Medical Officer of the Ministry of Health his approval and that approval would be forthcoming vided the article was (*a*) for the public benefit, and free from the taint of personal professional advertise- nt. Articles approved by the chief Medical Officer might signed by the author and might then be distributed ough one of the press associations."

These statements may easily be interpreted as an cial decision on the vexed question of signed ntributions by medical men to the public press, t the facts do not justify such a reading. For some ne past the British Broadcasting Corporation has mitted to Sir George Newman, the Chief Medical icer of the Ministry of Health, such talks on health they were proposing to broadcast, with a view to uring himself that the matter to be broadcasted s for the public benefit and free from the taint of sonal professional advertising. It seems that the ntral Council for Health Education, a recent develop- nt of the Society of Medical Officers of Health, posed to distribute through the press associations egular series of articles dealing with health subjects, l asked Sir George Newman for his advice whether publication of such signed articles would be regarded unobjectionable by the General Medical Council if authors were (*a*) senior whole-time medical cers of the public health service who in the ordinary rse were not likely to apply for promotion to other pointments; or (*b*) retired medical officers no ger seeking professional employment. The Registrar of the General Medical Council, when consulted, thought it desirable that the same principles should apply to this special series of signed articles as to the special wireless talks, and Sir George Newman expressed his willingness to exercise the same censorship over the publication of articles of this kind as he has done in regard to broadcasting. This is, we understand, the position which has been reached at the moment.

MENTAL DISORDERS IN SCOTLAND.

THE record of last year's care of the mentally afflicted and deficient of Scotland[1] contains no mention of novel departures or striking events, but proves that the foundations of lunacy administration are being strengthened and that healthy ideas are gaining ground. The total number of persons under the Scottish Board of Control at the beginning of this year was 18,702, an increase over last year of 122; this increase is all in the pauper class of patients, the number of private patients having slightly decreased. The number of admissions to asylums was 3168, which is 133 more than in the previous year, but 458 less than the average for the previous quinquennium; 703 voluntary patients were admitted, and 815 were resident on Jan. 1st last. This figure shows a remarkable increase, the average for the ten years 1918–27 being only 409. The average recovery-rate on admissions in all institutions, with the exception of lunatic wards of poor-houses, was about 34 per cent (no general rate is given in the report), and the average death-rate was 8·5 per cent. Most of the deaths were due to diseases of the circulation and brain, and there were only seven suicides. The number of mental defectives on the register was 2915, the admissions being slightly less than in the previous year. In discussing the life of defectives in private dwellings one of the commissioners points out once more that strangers look after them better than their own relatives. This fact is well known to all connected with the care of the mentally afflicted, but its explanation is not at first sight obvious. A patient living with strangers may be removed, and guardians will make strenuous efforts to avoid the stigma which they consider this will entail. Parents, from whom the patient cannot easily be removed, are apt to regard themselves as infallible. Many of these parents, moreover, possess a low intelligence and a rudimentary idea of cleanliness. When aliment is stopped because the family's circumstances have improved or the defective has obtained employment, patients and guardians alike are generally anxious to be free from official supervision. These, however, are the cases in which supervision is most necessary, as the labour of defectives is liable to be exploited.

The Board refer to the success of the observation wards which several parish councils have established and which are conducted on hospital lines. Of 1240 patients who passed through those at Stobhill and Duke-street in one year, 788 returned to their homes without the necessity for certification. The Board are anxious to extend the scheme. As they remark, the Royal Commission of 1927 recommended that the functions of the Board of Control and the General Board should be extended to include all matters relating to mental health. The annual lunacy grant, which amounts to £115,000, is given to improve the care of the mentally afflicted, and this object, in the opinion both of the Scottish General Board and of all who are concerned with the problem, would be better accomplished if, instead of remaining as it is—a grant in aid of certified lunatics—it were given to the Board to use at their discretion for the good of all mentally affected persons other than defectives. It could then be applied to the source of the evil instead of to its full flood, and would be many times more effective.

[1] Fourteenth Report of the General Board of Control for Scotland, for the year 1927. H.M. Stationery Office. 2*s*.

CIVILIANS AND BOMBARDMENT FROM THE AIR.

THIS week's manœuvres over London and the home counties seem to show that complete protection of a large city from aerial attack is at present impossible. It is a military axiom that means of defence never lag far behind means of attack, but for the moment, given equal forces, there is evidently no way of preventing a capital city from suffering severely by bomb-fire. The contents of the bombs to be used in true warfare are a matter of conjecture, but there is little reason to doubt that poison gas would be freely employed, and it may be of interest to recall the steps that are recommended to neutralise its effects. These were set out recently before the Academy of Medicine in Paris by Inspector-General Sieur,[1] who summarised a scheme agreed upon by the International Red Cross for the protection of civilians. This scheme was drafted in 1925 by a committee of experts —chemists, engineers, doctors, administrators, and workmen. Recognising that it is impracticable to supply everyone with individual protective apparatus of the best kind, it divides the community into two classes, active and passive. Active members—police, firemen, first-aid workers, and the like—receive the best possible equipment; passive members are given cheaper and more simple appliances which may safeguard them under ordinary conditions, but they must chiefly rely on being protected collectively. As a gas attack is likely to include attack by explosives, small bomb-proof shelters should be made to accommodate not more than a dozen persons. Any room, it is stated, can be rendered proof against non-lingering gases by hanging its openings with fabrics steeped in appropriate solutions or specially prepared, but it is better to use tightly fitting panels and maintain, by means of artificial ventilation, a pressure slightly above that of the surrounding atmosphere. The air should be taken from as great a height as possible and filtered mechanically and chemically; in shelters to be occupied by children or the sick and aged there should be a supply of oxygen. Shelters are best established in cellars, and there should be a stout layer of impervious flag-stones or concrete flooring over each, and where possible on each floor of the building. Besides these refuges there should be first-aid posts, special hospitals, and means for the transport of injured persons. Lingering gas imposes a serious problem, as it is highly poisonous and may contain pathogenic organisms. All places contaminated should be immediately cleared of their occupants and disinfected, and the occupants should be taken for bathing and disinfection to special stations, and should be excluded from ordinary shelters. Food and drinking-water should be protected, and municipal water-supplies should be covered with an impermeable mineral flooring, whilst gas and electrical conduits should be guarded against explosives. These provisions, said Dr. Sieur, should all be made in peace-time by committees of military and civil authorities, with representative citizens, for each district. The first-aid corps—in this country presumably composed of ambulance workers and trained volunteers—should be distinct from the disinfecting corps, which should be supplied by the fire brigade where there is one, and recruited from volunteers and local sporting organisations where there is none. He states that the British Red Cross is already training its personnel on these lines, but obviously the population here is wholly unprepared for a modern air-raid, whilst neither individuals nor municipalities are likely to plan their undertakings with aerial warfare in view.

[1] Bull. de l'Acad. de Méd., 1928, 3e sér., xcix., 680.

GIFT TO RADCLIFFE INFIRMARY.—Mr. W. R. Morris, the motor manufacturer, has given £38,000 for the building of a new maternity home at this hospital. He is the President of the Governing Body.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT CARDIFF.

(*Continued from p. 302.*)

SECTION OF MENTAL DISEASES AND NEUROLOGY.

AUTO-TOXÆMIA AS A FACTOR IN THE CAUSATION O PSYCHOSES.

Prof. W. WEYGANDT (Hamburg), in opening th discussion, pointed out that with the advance in th pathological anatomy of the central nervous systen it had become more apparent that mental derang ments were cerebral diseases, and that a morbi influence on the brain was the cause of mental di orders. The biological investigation of ment derangements was all the more important as th morbid anatomy of the brain had not fulfilled expe tations, nor had experimental psychology or psych analysis led to very definite results. Prof. Weygan then considered in detail the forms of retarded develo ment in relation to metabolism of the endocri glands. Disturbances of the thyroid gland in chil hood led to retarded growth and delayed or abse sexual development as well as to mental retardatio Treatment with thyroid relieved such symptom excellent results were also obtained in myxœdem In Graves's disease removal of a portion of t gland by operation was an important procedu but thymus and ovarian preparations had also be employed. The speaker referred to the fact th giantism and acromegaly were sometimes associat with idiocy, in addition to Fröhlich's syndrome. such cases a primary disorder of the cerebral cort was presumably present.

Prof. Weygandt considered that the thymus h also a relation to mental evolution. Klose h removed the thymus in young dogs and observ that the animals developed obesity and ceased grow, became stupid, tried to eat wood and ston and eventually died. H. Vogt had described thym idiocy in a dwarf, aged 17, with flabby muscles, frag bones, general tremors, and retarded general develo ment. As regards the suprarenal glands, Addiso disease was sometimes associated with headac depression, fatigue, insomnia, and deficient memo Strictly speaking, there was no such condition as uniglandular disorder, for after the loss of one end crine gland, changes in the other glands would occ In mongolism the physical signs were those retarded development, and might be associated w signs of thyroid or pituitary deficiency. Kafka h shown that the serum in most cases gave a weak b distinct "decomposition" reaction (Abderhalden) the pituitary gland. Also, the white blood cells w increased, while the viscosity of the blood plasma w decreased. Prof. Weygandt considered that mo golism was not syphilitic in origin. One of the m important problems in psychiatry was to determ the pathogenesis of dementia præcox (schizophreni Pathological changes had been found in certa cerebral cells, especially those of the third stratu of the cortex. The fifth and sixth strata might a show atrophic changes. The contention of M that degeneration of the spermogenic cells a Leydid cells was the basis of the disorder was n generally admitted. Prof. Weygandt considered th endocrine degeneration, as shown by Abderhalc reactions, was most important, although many h these reactions in doubt. If a disorder of metabolis and especially of the endocrine organs, affected brain rendered somewhat abnormal by heredi conditions were favourable to the development schizophrenia. Entirely different, in Prof. Weygand opinion, were the basic conditions of manic-depress psychosis (cyclothymia). The inherited factor in t disease was paramount and could be traced in per cent. of cases. There appeared to be no questio

anatomical basis, and he considered that we could ribute little or no importance to the factor of toxæmia. There was present an instability of ective mind resulting from heredity and possibly nected with vasomotor variations.

Autotoxæmia was of considerable importance in e or idiopathic epilepsy as distinct from symptotic epilepsy. In many cases it was possible to monstrate anatomical changes. For instance, iner had described gliosis of the cerebral cortex, aslin alterations in the cornu ammonis, Speilmeyer tomeningitis. Endocrine influences might also y a part, the suprarenal, thymus, corpus luteum, l possibly the pineal gland, all tending to rease the instability of the cerebrum and to prepose to convulsions, while the parathyroids, gonads, uitary, and possibly the pancreas, decreased this idency. Hepatic influence in mental disorders nained uncertain. Kirschbaum had described eneration in the corpus striatum and pallidum the cerebral cortex in association with acute yellow ophy of the liver. Prof. Weygandt attached no at importance to bodily fatigue and hunger, in the duction of mental disease, but insomnia might have efinite influence.

In summarising, Prof. Weygandt stated that in ny cases of mental disorder considerably biological and biochemical changes occurred which could explained by autotoxæmia. The facts discussed l also been applied to treatment. Preparations of roid gland were successful in the treatment of xœdema and cretinism, while results in pituitary orders had been obtained by X ray applications l glandular feeding. Malarial treatment, successful many cases of general paralysis, had not yet been nd to influence dementia præcox nor epilepsy. th diagnosis and treatment demanded that estigation of the autotoxæmic influences in chroses should be regarded as one of the most portant researches in psychiatry.

Dr. F. A. Pickworth (Birmingham) brought forrd some work which was being done in Birmingham connexion with the joint Board of Research for ntal Diseases and the Birmingham Mental Hosals. The question of focal and intestinal sepsis l been studied very carefully. They had found dence of infection with organisms of the paraphoid and food-poisoning groups which was conered to have a causal relation to focal sepsis riation in agglutinin response and metabolic turbance. A special study had been made of the ation of sinusitis of the sphenoid to pituitary turbance, and pituitary dysfunction might explain ne of the symptoms of endocrine deficiency. Dr. kworth showed slides illustrating: (1) the sphenoid us containing pus, and demonstrating that the uitary gland had very little protection from the anisms and toxins which invaded the damaged thelium; (2) a perforation into the pituitary sa from a sphenoidal sinusitis. Other slides illusted actual infection of the pituitary fossa, and one wed a number of organisms in a large mass of loid in the pituitary capsule, suggesting that normally large masses of colloid in the pituitary l relation to septic involvement of the gland. en septic involvement of the pituitary, it was sonable to suppose that septic products, or at st a perverted pituitary secretion, was able to reach in tissue.

Dr. E. Mapother (London) thought all were equally eed that every mental process was only the jective aspect of a bodily one which left traces l originated habits and reactions. As regards ss endocrine abnormalities and mental disorder, Mapother thought that the evidence suggested t in most cases, with the possible exception of thyroid, the association was rather one of frequent urrences than of causal dependence. He had own dystrophia-adiposo-genitalis coexist with fect mental normality; similarly, giantism was only occasionally associated with mental defect. Concerning genital glands, he thought that, if we interested ourselves in evidence of functional disturbances rather than gross anatomical changes, the history given by many patients was significant. Sexual disturbances and the psychological reactions arising therefrom, appeared of more psychiatric importance than all the rest of the endocrine disorders. Such conditions as erotism and nymphomania on the one hand, impotence and frigidity on the other, were extremely common, and the reactions arising from these conditions were most important.

Dr. I. S. Wile (New York) considered that the terms toxæmia and psychoses were employed in too broad a sense. They could not disregard heredity, infections, &c. Endocrine disorders and psychoses might be due to a common underlying cause, such as syphilis; concomitant as in association with cerebral tumour and diabetes; or in causal relation as mental enfeeblement and athyroidism. It was necessary to show causal relationship rather than coexistence of symptoms. At present all phases of study were essential to secure material facts from which later generalisations might be made. For many years it would be advisable to accumulate data regarding heredity, infection, trauma, and metabolism. Equally important were the appreciation of the psychological and psychogenetic factors entering into psychoses in relation to toxæmia.

Dr. Mary Barkas (London) advanced the view that the association of physical disorders with mental disease might be explained otherwise than as direct causes, and that the psychiatrist might promote the development of psychiatry far more by concentrating on the study of the mental processes of patients than by a flight into the laboratory. Dr. Barkas thought that plausible explanations of the association of bodily manifestations with psychosis could be offered. She believed that autotoxæmia and similar disorders might be related to mental disorder in the following ways: (1) as a precipitating factor; (2) as a source of mental stress; (3) as joint effect of some primary cause; (4) as chance concomitant; (5) as result of the mental and emotional or psychomotor disorder. It must also be remembered that while they were dealing with those cases of disordered bodily function which were insane, there remained in the general population far larger numbers suffering from similar disorders, but free from mental illness; the speaker held that it was for them as psychiatrists to investigate what were the other factors, lying perhaps in the inherited constitution and temperament, in the individual development of personality, or in the foregoing emotional situation of their patients, which had determined the mental breakdown. The physical disorder might have been the last straw, making a pre-existing burden of a stress intolerable, and its removal might make readjustment possible. Various endocrine defects might produce dwarfism, but many dwarfs were of quite normal mentality, notably achondroplasics, and some forms of pituitary infantilism. Where they were mentally abnormal, might we not equally well suppose that their mental symptoms were a reaction to their bodily abnormality, which produced a sense of inferiority or an attempt to over-compensate for this, cunning or suspiciousness, and an attitude of defence to make up for lack of physical strength, and a whole series of other mental reactions. Until we had studied these mental phenomena in sane and insane alike who laboured under endocrine disorder, we were not in a position to assert that mental symptoms, when found, were directly produced by the metabolic dysfunction.

Dr. R. D. Gillespie (London) said that the conception of autotoxæmia in this country had been restricted largely to conditions of supposed intestinal absorption. The bacteriology of the colon in persons mentally normal was in too vague a condition to make it safe to draw definite conclusions from a bacterial examination of the fæces in the psychoses. Similarly, regarding Dr. Pickworth's observations, it was

dangerous for him to argue from his interesting findings to the psychoses in general. Regarding intestinal toxæmia, clinical experience with Hirschsprung's disease showed that mental symptoms were usually absent in spite of the extreme intestinal stasis. Ulcerative colitis, in which toxic absorption certainly occurred, was not, as a rule, accompanied by mental changes, whereas mental symptoms often accompanied so-called mucous colitis, in which absorption was probably absent.

Dr. HELEN BOYLE (Brighton) looked at patients from the clinical side: What was the matter with them? What would cure them? How long would it be? It was encouraging that Prof. Weygandt mentioned recovery in dementia præcox, and clinicians would agree with him that some such cases appeared to recover. His paper suggested a hope that some test might serve to differentiate these cases from others. It was not satisfactory to assume merely that should recovery occur, the diagnosis was wrong. With regard to manic-depressive states, Dr. Boyle said that many patients seemed to show an association with Graves's disease. This was more obvious in the early stages, but even in confirmed cases the description of excitement, tendency pyrexia, rapid pulse, sweating, and other symptoms suggested hyperthyroidism. There was not infrequently an enlarged thyroid. When this phase subsided, the picture often suggested hypothyroidism—as though the thyroid was fatigued and could do no more. There was depression, weight increased, the patients were slow and weary, with lack of interest, and in exactly the reverse of their previous states.

Dr. E. GOODALL (Cardiff), the President, remarked that many acute and recent cases of mental disorder improved in large measure with a preliminary enema or colonic lavages. In Cardiff they had published from the Mental Hospital laboratory work upon the distribution of the various nitrogen constituents of plasma, cerebro-spinal fluid, and urine in some 40 (mostly recent) cases of mental disorder, and the results appeared to point to anomalies of protein metabolism. With regard to blood chemistry, the methods for the estimation of blood substances were at present far from adequate. Reliable methods for the estimation of glucose alone had still to be elaborated; also with cholesterol, the statements published regarding a diminution or excess of blood cholesterol in epilepsy and at the menstrual period were unreliable. Some 15 years had passed since Fauser published his results with the Abderhalden reaction in cases of dementia præcox and other mental disorders. His results at that time were mainly confirmed, and there seemed to be evidence that a positive reaction was obtained by Abderhalden's method with cerebral cortex and gonadal tissue in dementia præcox. Of late years one had heard and read little or nothing of the Abderhalden reaction in psychiatry, so that it was of interest to hear Prof. Weygandt's opinion that this method gives a positive result as regards blood and cerebro-spinal fluid in dementia præcox, not only of cerebral cortex and gonads, but often with thyroid and pituitary. If this were so, a means of diagnosis between true dementia præcox, and other mental conditions resembling it, should be established. The difficulty of carrying out the test no doubt accounted for its general non-employment.

CEREBRAL STATES CONSEQUENT UPON HEAD INJURIES.

A discussion on the differential diagnosis and treatment of these states was opened by Dr. C. P. SYMONDS (London). Apart from the immediate surgical risks of compound fracture, rupture of a meningeal artery, and subdural hæmatoma, the severity of head injury varied according to the nature and amount of damage sustained by the brain at the time of injury. When such injury did not prove fatal, there would result cerebral symptoms the differential diagnosis and treatment of which the speaker proposed to discuss. Concussion might be defined as a condition of subtotal cessat of cerebral function following immediately upon injury, with subsequent complete recovery wit 24 hours, at the end of which, in an uncomplica case of concussion, recovery should be compl The symptoms were probably due to tempor vascular embarrassment. Distinct from concussi though often associated with it, was the condit of cerebral contusion. The symptoms of cere contusion depended upon two factors: (1) the eff upon intracranial pressure, and (2) the site of lesion. The focal signs of the latter were those cerebral disease generally. The effect upon int cranial pressure depended upon the amount hæmorrhage and exudation. For the purposes clinical description, Dr. Symonds distinguis between a major and a minor degree of contusi The major form was almost always associated w concussion; after a few hours the patient parti regained consciousness, but instead of progress towards normal, he remained stuporose, restless irritable and might be noisy, hallucinated and e violent. This condition might persist for s days or weeks, the tendency being towards grad improvement. Lumbar puncture and the applicat of a manometer might show the presence of increa intracranial pressure; the cerebro-spinal fluid mi be blood-stained, indicating capillary hæmorrh In minor contusion, the injury might or might cause concussion. It was possible for a glanc blow to contuse the brain, without loss of consci ness at the time of injury. Symptoms might fol directly upon the injury, but more usually develo after a latent period varying from hours to we The three symptoms most constantly present w headache, giddiness, and mental impairment. characteristic feature of the headache was its rela to alterations of posture. The mental sympt consisted of defective memory, inability to con trate, decreased emotional control, and me fatigue. Apart from focal physical signs which v rarely encountered, there were other conditi such as epilepsy and permanent mental cha which must be related to local damage. Mi degrees of mental impairment—e.g., memory defect were frequent, but permanent mental deteriora necessitating institutional treatment appeared r Epileptic atacks might occur even in the e stages of a major contusion and were probably to subarachnoid hæmorrhage; attacks develo after a latent interval of months or years wer more serious significance. Cerebral abscess follov a compound fracture, and chronic subdural hæmato although both rare, were two sequelæ of head in which the neurologist was likely to encounter. subdural hæmatoma the patient began to comp of headaches usually several weeks after the orig blow. Other symptoms of intracranial pres gradually appeared, with stupor and finally co Owing to the long latent period and possibly tri nature of the original injury the diagnosis sometimes mistaken. The cerebro-spinal fluid m be found to contain altered blood-pigment flakes of fibrin. Finally, there was a consider number of cases in which the disability follo head injury was wholly or partly of a neurotic na and usually based upon the problem of compensat

As regards diagnosis, Dr. Symonds said that du the first 24 hours it was impossible to make a c prehensive diagnosis owing to the state of concus masking what lay behind. If, however, after pa or complete recovery of consciousness the pat sank again into true coma, or paralytic s developed, arterial hæmorrhage was almost certa present. The absence of concussion did not exc the possibility of symptoms of contusion or subc hæmatoma developing at a later stage. Stupor irritability after the first 24 hours indicated m cerebral contusion. A patient might appare recover and yet develop symptoms of minor contu after several weeks. Since the symptoms of m contusion were as a rule unassociated with phy

gns, it was often difficult to distinguish them from ıose of an anxiety state. Of particular importance the differential diagnosis was the character of the eadaches and their relation to posture. In neurosis ıe headache was continuous rather than inter-ittent, had little or no relation to posture, and was ggravated by mental stress. In true contusion the eadache might be associated with giddiness, also lated to posture, retardation of mental processes ıd defective memory for recent events were valuable gns of cerebral damage. It was important to member that the brain might be severely damaged ithout fracture of the skull or objective physical gns, and that, conversely, fracture of the skull as not in itself proof of cerebral injury. The gns of subdural hæmatoma were often those of erebral tumour—papilloedema, hemiplegia, &c.—and ıe cerebro-spinal fluid might exhibit xanthochromia ıd fibrin flakes.

As regards treatment in major contusion, relief intracranial pressure might be obtained, either y lumbar puncture repeated at two-day intervals, necessary, or by intravenous injection of 50–100 c.cm. 15 per cent. hypertonic saline. The effect of this tter was to cause shrinkage of the brain by absorp-on into the blood stream of extravascular fluid ntents. The effect was temporary only and the ocedure might have to be repeated at intervals two days. An alternative method was to give saturated solution of magnesium sulphate (3 oz. in oz. of water) by the rectum; to be effective, this lution should be retained for half an hour. In a ries of 80 patients with symptoms of cerebral ntusion Dr. Symonds found that 18, or 22·5 per cent., ated that they had made a complete recovery. ı cases of major contusion the chances of the patient ing able to return to full work were less than 1 in 3, ıd there was the same chance of total incapacity. ı cases of lesser injury, there was an even chance the patient being able to return to full work, and very small risk of total incapacity.

Dr. C. WORSTER-DROUGHT (London) entirely reed with Dr. Symonds in his statement that the ain might be very seriously damaged without acture of the skull, or indeed, evidence of bone jury. In assessing the effects and possible conse-ıences of head injury, far too much stress was laid on the radiographic appearance of the skull, and negative, the cerebral injury was often assumed—t only in legal, but also medical circles—to have en slight.

In his experience, the after-effects of what has en described as major contusion were more often vere than not—and personally he would not have aced the rate of complete recovery in these cases high as 22·5 per cent. Cerebral contusion might ıd to localised adhesions between the dura, achnoid, and cerebral cortex and so give rise to ilepsy—and all without X ray evidence of bone ımage. This was strikingly illustrated in one case at came under his observation—a case also teworthy on account of the excellent result of rgical treatment. A man, aged 28, fell, striking s head on the junction of two tram lines. Three ars after the accident his first epileptic fit occurred, ere being no previous history of epilepsy. Examina-ın showed a scar in the supra-occipital region, ıt no other physical signs.

The region of the scar was trephined, and when e piece of bone was removed, the dura on incision ıs found to be adherent to the underlying cortex. r. Worster-Drought had had this patient under servation since the time of operation—six and a lf years—and no further epileptic attack had curred; the patient returned to work and was cellent health. Equally successful was another se of traumatic epilepsy, due to a lesion that might described as unusual form of subdural hæmatoma the posterior parietal region. An interesting int was how long after a head injury could epilepsy pear? In his experience, it had been common r epilepsy to appear three or four years after the accident, and he had met with cases in which the first epileptic attack had occurred 10 and even 12 years after the head injury. As regards treatment of traumatic epilepsy, the conclusion was that in the presence of definite evidence of the site of injury, such as a scar, &c.—even if radiographic appearances were negative and in the absence of other localising physical signs—operation was worth while. He would not advise operation in the absence of physical signs or of some evidence indicating the site of injury. The mental sequelæ of cerebral contusion were often peculiar. One somewhat unusual effect was complete and apparently permanent inability to perform mental work, of which Dr. Worster-Drought gave examples.

Dr. Worster-Drought considered that head injuries in the left frontal region were the most serious as regards prognosis in respect of mental changes. A condition of dementia might result from damage in this situation. He had seen such cases, and one example he described. In view of the fact that W. E. Dandy, in America, had recently excised the right cerebral hemisphere in man without, it was reported, the patient showing evidence of mental change, such injuries to the left frontal region were of interest in its possible localisation of the main seat of intellectual activity. As regards treatment, Dr. Worster-Drought was not convinced of the practical value of intravenous injection of hypertonic saline. The relief of symptoms afforded was somewhat uncertain and transient. He mentioned experiments supporting this contention. He was inclined to regard lumbar puncture, repeated if necessary, as the best means of relieving intracranial pressure. The continued administration of saline substances either by the mouth or rectum might, however, also be of value. For chronic and persistent headache following head injury, when repeated lumbar puncture failed to give permanent relief, Dr. Worster-Drought was in favour of sub-temporal decompression. He had seen several cases in which this operation had given excellent results.

Dr. WILE remarked that in children cerebral contusion might lead to changes in personality accompanied by delinquency and epileptic equivalents, resembling some of the sequelæ of encephalitis lethargica. It was necessary carefully to distinguish the headache, giddiness, and various mental disabilities following minor contusion from psychoneurotic symptoms. It was important to apply psychological tests in determining defects of memory, whether visual or auditory, for recent or remote events. The relation of cerebral injuries to later educational disabilities could only be determined by more thorough psychological investigation. Traumatic neuroses might be exaggerated in frequency, but it is wise to be certain that minor mental symptoms were not functional before suggesting that they were the residua of organic disease or cerebral injury. He agreed that emphasis was necessary upon the statement that fracture of the skull was not proof of cerebral damage, and that, conversely, damage of the brain might exist without a fracture of the skull. In order to interpret the actual state of a patient following cerebral injury, it was necessary to know if he returned to his earlier occupation, or was subject to further re-education, or was obliged to change by reason of changing industrial conditions.

Dr. GILLESPIE said that the classical psychotic syndromes had no definite ætiological relationship to trauma, and certifiable insanity rarely occurred as the result of head injury. In some cases that had been recorded other factors had been prominent, such as alcoholism, and heredity. Several forms of late after-effects could be distinguished, including traumatic mental enfeeblement and behaviour disorders. The chief difficulty arose in the diagnosis of these defect-states from those of psychoneurosis; nevertheless definite criteria existed, such as slowing of thought, attention defect, and mood disorders. Also the

patient should invariably be considered as a whole, especially his previous personality.

Mr. WILFRED TROTTER (London) said that until recent years a whole train of symptoms following head injury had been regarded as vaguely due to hysteria, malingering, &c., but that such symptoms had been brought under scientific observation and were no longer so vague and indefinable. It was possible to distinguish as precisely as anything in medicine a form of amnesia that was characteristic of true concussion. This was retrograde amnesia—a loss of memory for events preceding the accident, the patient having no recollection for anything that occurred during the 15 to 20 minutes that preceded his head injury. A further point of importance in diagnosis was that in the headache following minor contusion the patient when free from such headache felt perfectly well; this was not the case with the psychoneurotic.

For intractable headache following minor contusion a decompression operation was indicated. In major contusion, Mr. Trotter doubted if one was justified in leaving the brain in a seriously congested condition over a long period. He advocated the special operation of making a small opening in the skull to interrupt the vicious circle of compression.

Dr. D. MCALPINE (London) confined his remarks to the question of treatment. Increased intracranial tension was brought about by traumatic œdema or hæmorrhage, or a combination of both. Œdema resulted in a general enlargement in the size of the brain which tended to bring its surface close up against the dura. The effect of this was to hinder in varying degrees the absorption of the cerebro-spinal fluid into the venous sinuses, but as the cerebro-spinal fluid continued to flow from the choroid plexuses and accumulated in the ventricles and basal cisternæ, more and more pressure was brought to bear on the medulla until it became paralysed. In some cases, therefore, traumatic œdema resulted in death from medullary compression, and this was a fact that could not be overlooked from the point of view of treatment. Lumbar puncture afforded an easy means of reducing the tension, and was practically free from danger in cases of head injury, excepting in the stage of shock. As long ago as 1905, Quincke pointed out that in brain injuries the estimation of the cerebro-spinal fluid pressure was of importance, and that the best results were obtained by drainage. Until recently little importance had been paid to the principles underlying this observation. A rise of blood pressure accompanying intracranial tension was true only of the late stages of medullary compression, and should not be relied upon as an early sign. The only sure guide to the tension of the cerebro-spinal fluid was the manometer. The normal reading of the cerebro-spinal fluid pressure lay between 6 and 8 mm. of mercury. When the stage of shock following a head injury had passed, and no immediate surgical interference was called for, lumbar puncture should be performed and the tension of the fluid measured. If this was raised, sufficient fluid should be allowed to drain away until the tension was reduced to just below normal. The puncture should be repeated at the end of 12 hours in any case of severity, and performed daily until the tension returned to normal. If after two or three punctures it was found that the tension was increasing, then the possibility of cerebral decompression should be considered.

Dr. G. RIDDOCH (London) said that it was important to separate anxiety states from those of post-traumatic defect. The latter were of the order of a mild dementia—deterioration of general mental capacity. The patient's symptoms tended to become worse towards the end of the day, whereas in anxiety states the symptoms were usually most pronounced in the morning. The symptoms were mainly those of lack in mental and physical efficiency and were an indication of the effect on the brain as a whole rather than a sign of local contusion. Mr. Trotter had suggested the term "post-contusional submentation" to indicate this condition. Dr. Riddo considered that hypertonic saline was of value relieving intracranial tension, but that the meth should be used with discrimination; it should given preferably per rectum.

Dr. E. MAPOTHER (London) was surprised th various speakers whose experience of head inju was larger than his own should have found acu and severe psychoses so rare a sequel of head injur He described three such cases directly followi severe motor-car accidents. The salient feature all three was a manic state, a joyous satisfactio with self and circumstances and disjointed hype activity. This was associated in a manner that o did not see in ordinary mania with confusio Disorientation and amnesia for current events w also present; in fact, all three cases somewh resembled a combination of mania with Korsakow syndrome. All the patients recovered within a fe months. Their condition was certainly not of pure emotional origin, and the patients had never show previously a neurotic or psychopathic disposition.

Dr. PICKWORTH said that the connexion betwee head injury and mental disease was found in loc or general cerebral anoxæmia or the results consequer upon inadequate removal of metabolic waste product There was a remarkable similarity in some of th mental symptoms which might occur in chron subdural hæmorrhage, simple anoxæmia an anoxæmia produced by carbon monoxide poisonin Almost any symptoms of mental disorder might b reproduced by this condition. A history of hea injury was by no means rare in mental hospitals.

Mr. GEOFFREY JEFFERSON (Manchester) added h testimony to the importance of the conditio of retrograde amnesia which Mr. Trotter ha mentioned. Another point was the anatomical bas of contusional states, be they recent or remot Histological study of fatal cases showed minu though widespread change. He believed that lesio of a similar but lesser degree existed in those patien who finally recovered. The outstanding feature the finer changes in the brain tissue was cerebr œdema, so that the perivascular sheaths we distended or ruptured. The question of treatme was based largely on pathological anatomy and i physiological results. If gross hæmorrhage w present the treatment was obvious. It was th œdematous cases which presented the chief difficult A great change had occurred in the surgical treatme of head injuries, a change from indiscriminate surge to one of almost complete conservatism. Mr. Trott had done a service in voicing his doubts as to wheth they were right in allowing patients to lie for lo in a condition of restless unconsciousness, and the could be no question that judicious surgery held place in treatment. If one could be sure that th brain was œdematous, hypertonic solutions (a 50 per cent. glucose rather than saline was preferabl should succeed. But if a temporary improveme was followed by relapse, decompression should done.

Dr. R. FAGER (Exeter) stated that during the w he had had the opportunity of studying a large numb of cases with mental symptoms of varying degr following head injuries. Headache was an almo constant and distressing symptom; usually, but n invariably, it was referred to the site of injury, a was aggravated by stooping. The pain might be depressing in character that the patient sought refu in alcoholic bouts and even suicidal attempts. Oth common symptoms were restlessness, irritabilit lack of concentration, and even hallucinations.

Epilepsy occurred four times more frequently severe injuries than in those of a superficial charact Cases in which memory defect was a conspicuo feature were mainly in the frontal region, but the appeared to be no relation between the degree amnesia and the severity of the injury. Men symptoms were the direct result of the head inju in a small proportion of cases.

Early Treatment of Psychosis in Psychoneuroses.

Dr. Helen Boyle (Hove) said that the discussion vided itself naturally into two parts: (1) the early eatment of the individual, and (2) how we could st obtain it. It must be recognised that insanity gan before a person was insane. Many, if not most, the difficulties met with in education, criminology, ligion, industry, and general medicine, could only solved with the aid of mental medicine—an under-anding of the mind of man, in health and disease. o doctor would admit that an understanding of e body in health was foreign to his purpose of appling with disease. No doctor should any longer lmit that an understanding of the mind in health as redundant, and still less of the mind diseased. he intricacies of its connexion with the body still eeded further elucidation. The early treatment of cent cases in mental hospitals had improved mmensely of recent years. The hospitalisation of ylums was progressing apace, but she wished to nsider not the certifiably insane treated in mental spitals, but the patients whom it was harmful to rtify or who were uncertifiable, the large number the maladjusted, the patients labouring under sessions, phobias, inhibitions, and so on. These ere the cases for whom early treatment was so cessary if they wished to prevent the faulty ljustments, criminals and others. Dr. Carswell as the pioneer who started wards for borderland tients in connexion with the poor-law, Dr. oyle believed, in 1904. The Lady Chichester ospital was the first hospital for these cases, and arted in 1905. The pioneer in providing out-tient facilities was the late Dr. Rayner, who with ergy and foresight, about 1889, induced the vernors of St. Thomas's Hospital to open an out-tient department for early mental cases. Since en, many others had followed suit.

Still earlier than those cases they had been nsidering were the children who show maladjust-ents in school life or before, and for them the child idance clinics offered useful help. They are, as fore stated, the first line of defence. Two are ready in existence in England, and an elaborate e in London is being planned with American lp.

Finally, Dr. Boyle said that she would suggest at it was desirable: (1) that every general hospital ould have facilities for treating early nervous and rderland patients; (2) that child guidance clinics ould be available for the young maladjusted ildren and be under the charge of doctors; (3) that linquents should have expert examination with gard to their mental adjustment—on the first fence—repeated if necessary; (4) that voluntary arders be allowed in county mental hospitals;) that early insane patients should be able to be eated on two doctors' certificates; (6) that voca-nal guidance should be available for all who wish —as at the National Institute for Industrial sychology—as a preventive measure against mal-ljustments and unrest; (7) that every medical udent should be obliged to devote some time to e study of all forms of mental disorder; (8) that amining boards should require evidence of know-dge of all forms of mental disorder. It was better pay for this than for insanity, delinquency, nemployment, and industrial unrest.

Prof. Weygandt said that one of the chief difficulties as the recognition of pre-morbid cases. In the mmoner types of mental disorders there was inherited predisposition—e.g., schizophrenia, clothymia—and even in early youth latent mptoms might exist. These it might become ssible to detect by biological and psychological ethods. There had already been several attempts investigate children liable to mental disorder. Hamburg they had a clinic for the observation d treatment of psychopathological boys by specially ained medical men and teachers.

Dr. Wile said that the prevention of psychoses and psychoneurosis should be undertaken in childhood to be adequate. From experiences at his own clinic at the Sinai Hospital, New York, he had found that much of the work could be carried out in an out-patient department. The problems met with could be classified under the following headings: (1) social maladjustments, which grew out of social nonconformity; (2) inadequate and undesirable habit-formations—e.g., insomnia and night terrors; (3) personality trends—e.g., timidity, selfishness, and seclusiveness.

Dr. Mapother agreed that in smaller country towns an out-patient department or a ward might be all that was attainable, but it did not follow that such an arrangement was the ideal. In advocating the psychiatric clinic wherever possible as against the policy of a ward or department in a general hospital, he laid stress on points: (1) that it was wise not to rationalise into laws of nature restrictions and separations and vested interests which had really grown up from the absurdities of the Lunacy Act of 1890; (2) the tendency of every progressive country in Europe was towards establishment of special clinics; (3) detailed knowledge of attempts in Great Britain to establish psychiatric treatment in general hospital wards was evidence of their inadequacy.

Dr. Barkas said that it was too often assumed that early and recoverable cases were necessarily mild ones, not needing the resources of a mental hospital for their treatment; this was far from being the case, for it was just those eminently recoverable acute cases who broke down rather suddenly, without such prodromal signs as were likely to be noticed, who formed the group in which prognosis was best, while those of more insidious onset were, unfortunately, quite often the most intractable. An extension to all patients of the provisions now available for private patients, with adequate supervision by the Board of Control, a thing no general hospital was likely to welcome, would do much to supply all that was needed for the present. Child guidance clinics had shown how greatly the problem of the psychopathic child was bound up with social considerations, and how all-important was the social worker in the re-education of the family. The same applied to the adult neurotic; and Dr. Barkas believed that no clinic for either in- or out-patient treatment would be able to do satisfactory work unless it included a well-trained staff of social workers who could deal with the environment of the patient.

Dr. R. G. Gordon (Bath) considered that an intensive study of the personalities of individuals was necessary whether sound or sick, and that particular attention should be paid to the capacity and success enjoyed by adjustments to environment. If this was done he suggested that it would be found that the person who under certain conditions, whether of toxæmia, endocrine disturbance, mental conflict or emotional shock, broke down into a psychosis, differed in his "personality make-up" from another patient who under similar conditions developed a neurosis. Moreover, he would suggest that one of the chief differences was, that in the first case the personality had no real tendency to adjust to the environment, and that in the present state of our knowledge our efforts scarcely increased this adjustment. With greatly increased knowledge we might be able to foresee that under certain circumstances which might be avoided, "A" would break down into a psychosis of a particular kind, say manic-depressive insanity; "B" into a psychosis such as dementia præcox, and so on; while "X" would break down into a neurosis of a certain kind, say, an anxiety state; and "Y" would develop hysteria, and so on. He could not affirm too strongly that this was an ideal situation, and that at present probably no one pretended to be able to carry out such subtleties in diagnosis; yet increasing experience seemed to be pointing that way.

Dr. J. R. REES (London) said that there were comparatively few who realised that the moral disorders, the character and personality defects of childhood, were the forerunners of much of the mental disorder of later life. Psychology should be studied in the nursery and in the infant school, and the general practitioner was the ideal person to tackle this early period. He had the entrée to homes and the confidence of patients. He asked if the B.M.A. could not initiate a campaign of education. The mental hygiene movement in America did a vast and altogether admirable work which was practically left untouched in this country. The general practitioner, with his experience and balance, was well able to get hold of the essential facts that were known, and would in consequence be infinitely better equipped to deal with the earliest manifestations of trouble and to do preventive work of inestimable value. Clinics, early treatment centres, and child guidance centres must come, and it seemed to him essential that the profesion should have adequate knowledge if it was to coöperate adequately with these specialised institutions.

Dr. GOODALL (the President) said the delay in dealing with the recommendations of the Royal Commission on Mental Disorders in respect of facilities for early treatment was deplorable. He detailed the arrangements at Cardiff for dealing with early cases in an out-patient department of the Cardiff Royal Infirmary during the past seven or eight years. Dr. Goodall stated that the 30 to 40 per cent. of patients amongst the direct admission to the Cardiff Mental Hospital who were annually discharged within six months of admission could—the majority of them—be treated at a psychiatric clinic, quite apart from the lunacy laws as at present constituted, and all the drawbacks which those laws implied. His constant advice to the Cardiff Local Authority was to rigidly abstain from any addition to their mental hospital, and to concentrate upon provision, in conjunction with the Cardiff Infirmary, of a fully-equipped clinic in psychiatry.

Dr. DORIS ODLUM (London) desired to emphasise most strongly that the provision of a psychiatric out-patient department in association with a general hospital was most valuable, not only in the interests of patients, but also as a means of educating the public, nurses and doctors in other departments of the hospital. Adequate social service in connexion with such a department, and specially trained welfare workers were also essential.

Dr. W. A. POTTS (Birmingham) said that the two most important centres for early treatment to be carried out were: (1) the infant welfare clinic, which provided the earliest opportunity for the examination and training of the child; (2) the antenatal clinic, where the attitude of the mother, and also of the father, to life, and also to the child, might be investigated, and, if necessary, adjusted. It was necessary to correct any misunderstanding that might arise from what was said about the damage of a sentimental attitude towards delinquents, by saying that those who were engaged in work with delinquents were out for justice, and for an opportunity for developing and drawing out the diminished sense of responsibility many delinquents had.

Dr. R. S. ALLISON (Ruthin) referred to some physical aspects of the treatment of the psychoneuroses. From the physical standpoint the first essential after a careful history was a thorough physical examination, and following this, investigations along bacteriological, biochemical, and radiological lines. The object in making these investigations was twofold: (1) the search for toxic foci, (2) to ascertain the physical peculiarities of the patient. The teeth, the throat, the accessory sinuses of the nose, the appendix, the gall-bladder, the colon, the urine and fæces were commonly the sites of a latent infection. In many cases this might be only detected after a thorough investigation of the case.

Dr. C. FORBES (Aberdeen), speaking as a gener practitioner, desired to support strongly Dr. Ree suggestion regarding the education of the professio The proposition should be urged by all who we interested in the early treatment of mental a nervous illness. There was a definite need for t institution of clinics as a medium not only of resear and treatment, but also for the education of fami doctors in the particular area served.

SECTION OF TUBERCULOSIS.

RELATION BETWEEN TRAUMA AND TUBERCULOSI

Mr. H. MORRISTON DAVIES (Ruthin) was in t chair, when Dr. NORMAN TATTERSALL (Leed read a paper on the relationship between traun and tuberculosis from the physician's standpoir He considered that inoculation tuberculosis, such butchers' and pathologists' warts, and acute gener ised miliary tuberculosis following such injuries as blow on a tuberculous testis, forcible movement a tuberculous joint, and operations on tuberculo glands came into the category of traumatic tube culosis. In 300 cases of pulmonary tuberculosis found six cases in which trauma was suggested the exciting cause, and in four of these, very defini symptoms had bridged the gap between the inju and the onset of the pulmonary lesion. He regard as satisfactory Parkes Weber's classification of su cases into (1) those in which no tuberculosis w suspected prior to the injury, and (2) those in whi tuberculosis was known to exist before the accide An injury rarely produced a state of lowered resis ance to the implantation of tubercle bacilli, and t more probable explanation was that the injury h activated an existing focus of disease. To suppo this contention he instanced the work of Opie a others who had isolated tubercle bacilli from gla and lung tissue which showed no naked-eye eviden of tuberculosis. Further, accidental wounds tuberculous patients healed readily. Although inju to the chest might give rise to any form of pulmona tuberculosis, the disease did not necessarily start the same side as the injury. Compression injuri were more potent in exciting pulmonary tuberculos than penetrating wounds. The course of the disea subsequent to injury might be acute, subacute, chronic. Such symptoms as pleurisy and hæmoptys were of great importance in fixing the date of ons but it was very important in the assessment of clai for compensation that "bridge" symptoms shou be present between the injury and the diagnos He suggested the following questions as helpful arriving at a decision.

1. Was the patient actively or passively tuberculous bef the accident, and if the former, what was his expectati of life?
2. Is the fact of injury definitely established, and was of such a nature as to be likely to damage an active quiescent lung focus?
3. What period of time elapsed between the injury a the diagnosis, and was the period covered by brid symptoms?
4. Is the present condition of the patient and the cou of the disease such as might be expected if the injury h reawakened or aggravated an existing latent focus disease?

Mr. ROBERT MILNE (London), in discussing t question from the surgeon's point of view, said th whereas trauma may lead to a wound and to t implantation of tubercle bacilli in the damag tissues, weakness from unsuspected tuberculosis, for example in the knee-joint, may also lead to accident. In some cases trauma may give rise to infection of the injured part with tubercle baci from the blood stream, but, in his opinion, t percentage of such cases usually given (30 per ce according to some authors) was much too high. I would put it as low as 2 to 5 per cent. Mode diagnostic methods had shown that many of t so-called tuberculous lesions following trauma we

stances of non-tuberculous conditions such as betic spine, chronic traumatic arthritis, Kümmell's sease, Perthes's disease, *pied forcé*, fibro-sarcoma of e femur, &c. He illustrated these and other nditions by a series of lantern-slides. In conusion, he said that injury to a tuberculous joint d lead to recrudescence of the disease, but emphaed his opinion that trauma was not a common use of tuberculosis in cases where a quiescent cus had not previously existed.

Dr. OTTO MAY (Prudential) dealt with the matter om the point of view of accident insurance. He reed with most of Dr. Tattersall's statements. r. Milne, he said, had shifted the discussion to nother plane, and had maintained that we must uestion the diagnosis of traumatic tuberculosis in arly every case. But the employer is still liable r compensation claims whether the condition is berculous or not, so that, in compensation cases, e exact diagnosis was not really a matter of first portance. Dr. May classified traumatic tuberlosis for the purposes of accident insurance and mpensation under four headings: (1) recrudescence a pre-existing focal lesion; (2) miliary tuberculosis llowing trauma at the site of a tuberculous focus disease; (3) tuberculosis arising at the site of an jury without a history of previous tuberculosis; and) cases in which pulmonary tuberculosis arises after injury to some other part of the body. In a court law, he said, one can only give an opinion as to e possibility of the accident having caused the sease, but provided that one did not assume the se of pontificial infallibility, a touch of dogma was more practical help in the dispensation of justice an the cleverest exposition of scientific agnosticism.

During the discussion which followed the reading the papers, Sir ROBERT PHILIP (Edinburgh) ggested two practical points in dealing with accident ses. In the first place, a series of radiograms the affected parts and of the chest should be taken short intervals and, secondly, many patients had use to bless the accident, because it brought a nouldering tuberculous focus into view, and by rly treatment and the care that was taken in mpensation cases, many valuable lives were saved. Dr. ALEXANDER BROWNLEE (Cardiff) thought that e percentage of cases following injury was higher an the figures given by Mr. Milne. In a series of s own cases he had found 32 per cent. of cases of p disease, 33 per cent. of spine cases, 22 per cent. knee cases, and of other joints 25 per cent. gave history of injury. He agreed that it was doubtful nether trauma to a previously healthy person uld set up tuberculosis in the injured part, but ought that probably the majority of the population s pathologically, although not clinically, tuberlous. "Bridge" symptoms were important in mpensation cases, especially if occurring within months following injury to the knee, within months after trauma to the hip, and in the case the spine, within two years. However, one could t dogmatise on this point.—Dr. CECIL WALL ondon) said that repeated multiple minor traumata, tigue, and mental anxiety could all help in the tivation of a dormant tuberculous focus. There s little difference, he said, between minor multiple umata and fatigue.—Dr. JAMES CROCKET (Glasgow) garded both mental and physical strain as instruental in exacerbating tuberculosis.—Dr. H. V. NTOR (Cheshire Joint Sanatorium), in discussing berculosis following war injuries, said that the nistry of Pensions did not consider claims in cases gnosed as tuberculous within the last two years.

Dr. TATTERSALL, in reply, said that he was gratified at a blow had been struck against the theory that berculosis was implanted on injured previously althy tissues. In reply to Dr. Cantor, he said at the Ministry of Pensions had been very generous their treatment of ex-Service men.—Mr. MILNE l not agree with Dr. May that the diagnosis was not important in compensation cases. He regarded it as essential both from the point of view of treatment and of compensation.

FACTORS IN THE BIOCHEMISTRY OF TUBERCULOSIS.

Dr. L. S. T. BURRELL (London), in reading a paper on the therapeutic value of the heavy metals in pulmonary tuberculosis, referred briefly to the use of copper and lead, and to the reactions following the use of such metals as well as of other shock-producing agents such as serum, tuberculin, protein, sun rays, &c. In the use of gold, and especially of sanocrysin (double thiosulphate of gold and sodium) he emphasised the point that the reaction following an injection was similar to that produced by the other shock-producing agents, but that it differed from them in its effect, in that the reaction was followed by the disappearance of tubercle bacilli from the sputum, and by diminution in the amount of sputum. The chief indications for the use of sanocrysin were (1) in cases where the amount of sputum containing tubercle bacilli persisted in spite of other forms of treatment, and (2) in cases of bilateral disease, where it could be used in conjunction with artificial collapse of the more extensively diseased lung. He usually commenced with a dose of 0·1 g. followed three days later with one of 0·25 g. Then, at weekly intervals, he gave doses increasing from 0·5 to 1 g. until the patient had had 5 or 6 g. The complications, such as albuminuria, a metallic taste in the mouth, stomatitis, erythematous rashes, and febrile reactions, had not been serious or of frequent occurrence. In conclusion, he said that he regarded sanocrysin not as a specific against tuberculosis, and certainly not as a cure, but as a useful addition to other methods of treatment.

Dr. J. CLIFFORD HOYLE (Cambridge) read a paper on the serum calcium in experimental tuberculosis. Changes in the calcium metabolism had long been recognised to be associated with tuberculosis, and earlier observers had maintained that "demineralisation" occurred during the disease. No sound evidence existed for the belief that decreased calcium retention took place in tuberculous infections, except possibly in the terminal stages. This fact could probably be explained as being due to infection with secondary organisms. To support this view he gave the results of some interesting experiments carried out on rabbits. He had observed a striking difference between the serum calcium estimations when intraperitoneal as opposed to subcutaneous inoculations of bovine tubercle bacilli had been made. In the former the disease became generalised without an ulcer at the inoculation site, and in these cases little change was observed in the serum calcium curves, but in the latter where an ulcer infected with secondary organisms formed, the serum calcium fell steadily. If the ulcer healed, as sometimes happened, the serum calcium rose again, even while the generalised disease became steadily worse. Septic infection in previously normal rabbits also produced a considerable fall in the serum calcium.

Dr. W. H. TYTLER (Cardiff) gave the results of his work on the "tuberculin-active fraction of the tubercle bacillus." He referred at length to the work of previous observers, especially of Long and Siebert. His own work had been primarily concerned with the production of a highly active preparation for experimental work. His methods of preparation were, in principle, similar to those of other workers, and his product was not a newly discovered substance, but was a highly active fraction with some practical application. The substance, obtained by the method of which he gave full details, was non-dialysable, and consisted of protein with a small admixture of proteose. Then nitrogen content varied from 11 to 12·5 per cent. The active fraction used for skin reactions gave a more sharply defined reaction than tuberculin, particularly at low concentrations. It might be stored in dry form, was accurately

measurable by weighing, and was stronger than old tuberculin. He had no reason to believe that it would have any greater therapeutic value than tuberculins in general.

In the afternoon Mr. MORRISTON DAVIES and Mr. TUDOR EDWARDS gave a demonstration of the results of thoracic surgery, and later, at the Cardiff Royal Infirmary, showed a series of patients on whom thoracoplasty had been performed. Dr. PARRY MORGAN (Cardiff) showed his artificial pneumothorax apparatus fitted with a double manometer.

AFTER-EFFECTS OF SURGICAL PROCEDURES IN PULMONARY TUBERCULOSIS.

Mr. TUDOR EDWARDS (London) opened the discussion by reading a paper on the after-effects of surgical procedures in cases of pulmonary tuberculosis. He regarded the after-results as being due to a series of factors such as: (1) the right choice of cases, (2) the type and extent of the operation, (3) the anæsthetic employed, (4) the operative mortality and complications, and (5) the after-treatment. In discussing the choice of cases for operation, he said that the chief factor was the condition of the "better" lung, which should show no active disease for at least three months prior to the operation. In cases of doubt it was his custom to perform a preliminary phrenic evulsion on the more-affected side in order to test the capacity of the better lung to withstand the increased strain to be placed on it. In his experience there was a tendency to wait too long before the surgeon was called in. The chances of recovery by surgical measures diminished with the increase of the amount and activity of the disease in the lung. Surgical procedures in diseases of the chest had incurred a certain amount of unnecessary odium mainly on that account. Experience had convinced him that adequate collapse of the affected lung could be obtained by a preliminary phrenic evulsion and a subsequent two-stage thoracoplasty from the first to the tenth ribs posteriorly. In order to produce localised collapse, phrenic evulsion and pneumolysis were satisfactory operations. In tuberculosis, however, it was usually necessary to secure complete collapse. The best anæsthetic was a gas and oxygen combined with local anæsthesia. The operative mortality and the complications of thoracoplasty such as shock, pulmonary embolism, spread of disease in the opposite lung, and septic infection of the wound could be largely diminished by careful pre-operative and after-treatment. No complications had occurred in his cases of phrenic evulsion and apicolysis, nor had they required much in the way of after-treatment. In thoracoplasty, after-treatment is essential, an important feature being that the patient should spend from three to six months under sanatorium régime.

Dr. F. G. CHANDLER (London), in discussing the question from the physician's point of view, said that a physician, in recommending a serious operation, took a great vicarious burden on himself. He should ask himself the question, "Would I, if necessary, have this operation performed on a member of my family or on myself?" The surgeon's relationship to the patient was, in a sense, impersonal, and it was the physician who had to consider the operative risk, the possibility of after-pain and discomfort, and the ultimate result. In chest surgery there were peculiar difficulties. Problems of judgment arose as well as questions of technical skill. If it were possible, a combination of the physician-surgeon would be ideal, and there were indications that developments along these lines were taking place. The open operation for dividing pleural adhesions was, in his experience, usually followed by sepsis and empyema, although there was little disturbance from the actual operation. In phrenic evulsion the immediate risk was small, but some complications, such as hæmorrhage, hæmoptysis, air embolism, chylous fistula, pulmonary œdema, and injury to other nerves had been reported. He agreed with Morrist Davies that the operation was of undoubted val in basal tuberculosis and as an accessory operation artificial pneumothorax. Apicolysis and pneum lysis were, from the physician's point of view, t operations of choice. The shock, after-discomfo and operation mortality were negligible. A sat factory packing substance had still to be found, b he was greatly interested in the possibilities of th operations. It was difficult to judge the mer of thoracoplasty, on account of the extremely varia results. The after-results could not be usefu discussed without a clear idea of the criteria suitability and non-suitability. Of the cases suita for the operation, he gave the following types: If a successful artificial pneumothroax had been allow to terminate with a recurrence of symptoms a re-collapse was not possible; (2) if an artificial pneum thorax was imperatively indicated in a case of p gressive unilateral disease, yet by reason of adhesio it was not possible to induce one; (3) if chro unilateral disease was present causing distressi symptoms. The cases not suitable included: those in which there was a suspicion of active progressive disease in the "better" lung; (*b*) th in which the general resistance was poor; (*c*) th with fibroid phthisis with every prospect of a reas ably healthy life; and (*d*) cases with amyloid disease tuberculous ulceration of the intestines. The ope tive mortality varied between 5 and 12 per cent., t after-pain and distress were frequently considerab but the results of the operation were, on the wh good. Surprisingly little deformity was produc The result could not be guaranteed, but in some ca there was a prospect of complete and permane recovery which no other method of treatment co procure. Oleothorax, although our experience it was limited, would probably be of great value preventing obliterative pleurisy in artificial pn mothorax.

Dr. D. W. FENWICK JONES gave the results of cases of thoracoplasty carried out at the North Wa Sanatorium. His general impression was, that wh it was a desperate operation in advanced cases, was a pity that cases of earlier disease were n selected for the treatment.—Dr. WALL said that t last stronghold of the physician had been taken the surgeon, but he agreed that the results of ch surgery were good, and he looked forward to t establishment of the chest specialist who would both a physician and a surgeon.—Dr. D. A. POWE (Cardiff) remarked that we were at the beginn of an important operative era, in which speciali would be regional, and not divided into medic and surgery. He was somewhat disappointed w the results of artificial pneumothorax, and hop that those of thoracoplasty would be better.—M MORRISTON DAVIES, in showing a series of pho graphs and radiograms of cases of thoracoplas pointed out in the photographs the negligible defor ity as compared with radiograms of the same ca showing extensive collapse of the lung and t chest-wall. He regarded the one-stage operation better than the two-stage, because the pulmon collapse obtained was more complete, and a because the patient did not have to face the anxi and shock of two serious operations. He plead for the establishment of operating theatres in sa toria, and thought that in this respect the exam of the Welsh Memorial Association might well followed.

Mr. EDWARDS, in reply, said that after-pain w largely due to bad technique. An operative mortal of 12 per cent., taking everything into account, w not excessive.

TUBERCULOSIS AS SEEN BY THE GENERAL PRACTITIONER.

Dr. ANGUS KENNEDY (London), in opening t discussion, said there had been a surfeit of laudati about the success of the campaign against tub

ulosis. In his opinion, the expenditure of time and money had not been justified. The mortality from uberculosis in 1821 was 25 per cent., in 1871, 12 per cent. So that, at a time when no preventive measures had been taken, the mortality had fallen to alf. Since then, with the advent of the campaign, he mortality had fallen only 3 per cent. He explained his as being due to the fact that tuberculosis was an pidemic disease and that, as in all epidemics, the irulence of the bacillus had been greatly attenuated ntil the disease was now very mild, and in fact ndemic. In 50 years' time it might again become pidemic. Immunity in his opinion was inherited, nd by way of illustration he cited his experience mong negroes who had come to the East-end of ondon. In one half-caste family he had observed hat the boys, who all had a touch of the "tar-brush," ied from tuberculosis, whereas the girls, who had nherited mostly the characteristics of the white arent, were still alive. We should aim at producing race immune from tuberculosis. Before people narry they should look into the family history as ell as into the banking account.

Dr. R. CAMERON (Cardiff) said that early diagnosis as sometimes tragically simple, and in other cases xceedingly difficult. He pointed out that in Cardiff, uring 1926, 527 fresh cases of tuberculosis had been otified and that the number of deaths from the isease was 288. These figures were relatively mall, as during the year no serious influenza epiemic had occurred. After giving other interesting etails as to the prevalence of the disease, and the ousing conditions, together with the number of ontacts, he proceeded to the detailed account of he early diagnosis of pulmonary tuberculosis, basing is description on Pottenger's classification of the ymptoms into pulmonary, reflex, and catarrhal. Ie next emphasised the diversity of the modes of nset of pulmonary tuberculosis, and finally discussed he various methods of physical, laboratory, and adiographic examination. The tuberculin tests were ot, he considered, of practical value to general ractitioners.

Dr. J. R. GILLESPIE (Belfast) thought that the ubcutaneous tuberculin test, but not Pirquet's skin eaction, was of great value in diagnosis. During he past 15 years he had found 300 cases giving negaive results to the test, and of these only five subseuently developed tuberculosis. It should be emembered that a negative tuberculin test did not ıean that the patient would be immune for life.

Dr. AMBROSE OWEN (Aberdare) agreed with Dr. Kennedy that tuberculosis was on the decline, but e thought that public health measures had done ıuch to decrease the incidence of non-pulmonary uberculosis. Epidemics of other diseases such as ıfluenza were largely instrumental in increasing he incidence of pulmonary tuberculosis. Contrary o Dr. Kennedy's opinion, he found phthisis more cute than it was 15 years ago. Pleurisy and æmoptysis were not always indicative of tuberulosis. Hæmoptysis especially was a frequent omplication in epidemic influenza. A striking fact as that hæmoptysis occurred in phthisical and on-phthisical patients during the same seasons, nd in the former was often due to secondary ıfections. Our failure to control the great epidemics ffecting the respiratory system was one of the easons why phthisis was still so rampant.

Dr. R. J. MATTHEWS (Newport) pointed out the ontrast beyween tuberculin reactions in the urban nd rural populations. The former gave positive nd the latter negative reactions in most of the cases e had tested.

Dr. KENNEDY, in reply, said that we could only ıdge the results of treatment by statistics. Epiemics ceased owing to the attenuation of the germ nd to the elimination of the susceptible people by eath. By keeping alive those susceptible to tuberulosis, we were doing our own progeny a grave ıjustice.

EXHIBITION OF DRUGS, SURGICAL INSTRUMENTS, FOODS, AND APPLIANCES.

(Concluded from p. 302.)

SURGICAL AIDS; HOSPITAL AND LABORATORY EQUIPMENT.

[21] The Denver Chemical Manufacturing Co. and [25] The Thermogene Co., Ltd. (Haywards Heath, Sussex, and Victoria Embankment, E.C. 4), displayed their well-known "Antiphlogistine" and medicated wadding respectively for the few who are not already convinced of their value.—[53] Baird and Tatlock, London, Ltd. (14–15, Cross-street, Hatton-garden, E.C. 1), from a large selection of bacteriological, pathological, and physiological apparatus, selected for special attention an incubator with a patent registered regulator; Kahn's outfit for the precipitation test of leprosy and syphilis; and Horrock's outfit for detecting chemical poisons in water.—[79] British Distribution Co. (52, Mortimer-street, W. 1) demonstrated the "Camp" physiological supports, embodying certain patent adjustments designed to give correct anatomical support without undue constriction and with the required pressure and uplift. Special models shown were the "Camp" ptosis support for gastric or intestinal prolapse; "Camp" visceroptosis support, giving a flattening yet upward-cupping effect, and "Camp" post-operative supports.—[29] R. H. Dent (309, Oxford-street, W. 1) had devised several new features of the "Ardente Aid for the Deaf." The wrist-watch pattern, shown last year, has been followed by the "hat-button," which can be pinned inside the lining of a hat and is remarkably inconspicuous. The latest stethoscope is smaller than its predecessors, can be used monaurally or binaurally, and gives a very clear enhanced sound with complete absence of electrical noises.—[35] Fassett and Johnson, Ltd. (86, Clerkenwell-road, E.C. 1), were showing again the well-known Mead's rubber adhesive plaster, and Seabury's "Gold Cross" absorbent cotton, as well as plasters, ligatures, and bandages.—[85] General Acoustics, Ltd. (77, Wigmore-street, W. 1), drew special attention this year to the new "Dime" earpiece, about the size of a sixpence and weighing two ounces, worn without head-band or crook, and leaving the hands free. The midget battery is very powerful and gives no distortion.—[15] Theodore Hamblin, Ltd. (15, Wigmore-street, W.1), showed ophthalmic instruments and equipment, including the Lister-Morton luminous ophthalmoscope; a new children's astigmatic test by Mr. E. E. Maddox; the Lawson self-contained operating lamp for use where no electric current is available; and a special display of telescopic spectacles for operating and for low visual acuity.—[13] Charles Hearson and Co., Ltd. (68, Willow-walk, S.E. 1), showed a wide range of incubators, ovens, stills, centrifuges, and other laboratory equipment, including the "Hellige" comparator for estimating pH values; a new "Klett" top-reader colorimeter, and several new Reichert microscopes, especially a monobinocular one on a new principle. This firm has opened a new show-room at 27, Mortimer-street, W. 1.—[40] Hoskins and Sewell, Ltd. (Bordersley, Birmingham), emphasised the usefulness of the new patent castor-pad action for allowing the bedstead to stand firm on rubber pads or to be wheeled on castors. They also showed the Nottingham Children's Hospital wheeling cot; the S. P. Smith's extension fittings with side attachment for abductions, by which any and all fractured limbs can be fixed; and several other bed attachments and screens.—At Stand [56], The Inhaling Drug and Apparatus Co., Ltd. (30, Grosvenor-place, S.W. 1), we learned that even insulin may now be administered by inhalation therapy, while excellent reports have been received of the use of the Spiess-Drager drug nebulising and inhaling apparatus in the treatment of tuberculosis and whooping-cough, as well as asthma and other lung conditions.—[64] Short and Mason, Ltd. (Atlantic House, 45–50, Holborn-viaduct, E.C. 1), demonstrated

the familiar "Tycos" sphygmomanometers, thermometers, and barometers. The new automatic recording type will be on the market shortly.—[92] Simco, Ltd. (22–28, Shand-street, S.E. 1), showed a range of beds which contain no cast iron, and are, therefore, unbreakable, especially an adjustable fabric-bottomed bed in which the patient can be put into any position with a minimum of effort. The universal bottom can be fitted on any ordinary bed frame, and is, therefore, extremely convenient for home nursing.—[4] Spencer Corsets, Ltd. (Banbury, Oxon), stressed the fact that each garment made by them is designed for each individual patient from exact measurements by a trained corsetière. They drew particular attention to their sacro-iliac corset and abdominal supporting corset for visceroptosis and pregnancy.—[48] John Weiss and Son, Ltd. (287, Oxford-street, W. 1), had a display of surgical instruments, including many new models and modifications, and a great number in stainless steel. The display included thyroid and cystoscopic instruments, and Bishop Harman's scotograph.—[90] Whitfield's Bedsteads, Ltd. (109–125, Watery-lane, Bordersley, Birmingham), showed improved "Lawson Tait" fracture, epileptic, cardiac, and obstetric bedsteads, drawing attention to the fact that the double wheeling foot-end can be let down on to wood blocks when the bed is wanted steady. The obstetric pattern has nickel-plated crutches and a winding-up frame.

X Ray, Light, and Heat Apparatus.

[78] The Dowsing Radiant Heat Co., Ltd. (91–93, Baker-street, W. 1), showed samples of many modern appliances for the application of the Dowsing treatment, ultra-violet lamps, and electric radiators of all kinds, particularly an expanding radiant heat apparatus which can be used for both legs or the abdomen or a single limb.—[91] Philips Lamps, Ltd. (145, Charing Cross-road, W.C. 2), introduced the "Metalix-Portable," a new compact apparatus for the general practitioner, which packs into a suit-case, stands on adjustable telescopic legs, plugs into any wall fixture, and is absolutely shock-proof. There was also a new deep therapy tube for operation at 220,000 volts.—[77] The Solus Electrical Co. (100, Judd-street, W.C. 1) showed a 30-M.A. X ray transformer set, complete with all-metal control table; the Solus-Jarhns Potter-Bucky motor-driven revolving grid, with special centring device; the valve-rectified "Solustat" apparatus; an air-cooled double-gap diathermy apparatus, and a great range of electro-medical and ultra-violet apparatus.

Books.

[5] Messrs. Baillière, Tindall and Cox (8, Henrietta-street, W.C. 2) exhibited English and American medical and scientific books from their own press, as well as those issued by a number of other firms.—[68] Messrs. J. and A. Churchill (40, Gloucester-place, W. 1) showed an interesting series of medical directories, from the small crown octavo of an inch thick, of 1846, up to the enormous eighty-fourth issue of last year. Among other books were Massie's "Surgical Anatomy"; the seventh edition of Rowlands and Turner's "Operations of Surgery"; the new Taylor's "Medical Jurisprudence"; the ninth edition of Cushny's "Pharmacology"; and the "Recent Advances" series, of which the latest are: "Diseases of Children," by W. J. Pearson and W. G. Wyllie; "Surgery," by W. Heneage Ogilvie; and "Tropical Medicine," by Sir Leonard Rogers—[72] William Heinemann, Ltd. (99, Great Russell-street, W.C. 1), included in their exhibit MacCormac's new edition of Jacobi's "Atlas of Dermochromes"; the second edition of Dan McKenzie's "Diseases of the Throat, Nose and Ear"; McDonagh's "Nature of Disease"; and Halls-Dally's "Low Blood Pressure."—[37] H. K. Lewis and Co., Ltd. (136 and 140, Gower-street, W. 1), had a number of convenient clerical aids for the practitioner, including a new roll-top cabinet for panel envelopes in one, two, three, or four sections, each holding 500; and a useful series of instruction slips for patients, giving printed details, for instance of how to prepare a fomentation, exercises fo constipation, after-care of dental extractions, an alkaline treatment of gastric ulcer. On the cover supplied for these slips are relevant reminders for th doctor. Among the books recently issued by th firm are "The Injection Treatment of Varicos Veins," by A. H. Douthwaite, third edition; " Shorter Anatomy" and "Anatomy for Artists," b E. Wolff; and "The Brain from Ape to Man," by D Tilney.—[89] The Oxford University Press (Falcon square, E.C. 1) showed text-books, manuals, and oth works, including "Gastro-Intestinal Diseases," fro the James Mackenzie Institute; the Robert Jon birthday volume; the fourth edition of Humphri "Artificial Sunlight"; and the second enlarge edition of Fairbairn's "Gynæcology with Obstetrics. —[16] John Wright and Sons, Ltd. (Bristol), showed large selection of books, including a new edition Herbert French's "Index of Differential Diagnos of Main Symptoms"; H. L. Tidy's "Index of Sympt matology"; C. P. Wakeley's and St. J. D. Buxton "Surgical Pathology"; and the "Synopsis" serie

Spas.

[94] Braceborough Spa (Lincs.) is already known valuable for skin affections, and its water is now beir prescribed for the treatment of latent infection The calcium content is very high: 30·39 grs. per gallo of calcium bicarbonate, and is, therefore, recommende for all forms of calcium deficiency, particularly infants.—[18] Harrogate (Baths and Wells Depar ment) has added to its already diverse waters "Fango a curative mud which has recently been discover near the axis of the anticline around which th peculiar geological formation of the Harrogate stra centres. The mud is radioactive, and contai sulphur.—[3] The Stanboroughs is the London hydr pathic establishment, and has excellent facilities f convalescent care and modern methods of treatmen

Miscellaneous.

[74] The Food Education Society (29, Gordo square, W.C. 1) displayed its dietetic books a pamphlets, including a number of Welsh edition The latest leaflet, entitled "A Salad a Day," giv arguments and prescriptions for salads. Mr. Hecht "School and University Diet" and "The Diet Brain Workers" were selling well, and another usef publication on show was "The Reform of Institution Housekeeping."—[86] The Hammond Varityper C Ltd. (75, Queen Victoria-street, E.C. 4), natural laid emphasis on the special medical keyboards f typing prescriptions, and also the mathematical a chemical formulæ keyboards and those especial adapted for writing in foreign languages.—[36] T Medical Insurance Agency (B.M.A. House, W.C. again recommended its valuable services, particular drawing attention to the charitable work it is able support both at Epsom College and for the orph daughters of medical men. Messrs. Mann, Egert and Co., Ltd., continue to act as consulting mot engineers to the agency.—[55] The Medical Sickne Annuity and Life Assurance Society, Ltd. (30 High Holborn, W.C. 1), offered its usual attracti policies to doctors and dentists.—[88] An unusual b very interesting exhibit was that of the Pentec High-pressure Casserole Cooker, shown by Philli and Proctor, Ltd. (125, High Holborn, W.C.1). this simple covered saucepan food is cooked under pressure of 45 pounds to the square inch. In this w the heat is greatly intensified, and any food can cooked in eight minutes. It is almost impossible overcook, and therefore a joint and vegetables can put in together, the pressure adjusted by a simp device on the cover, and when the whistle blows few minutes later all the contents will be fou equally cooked. In addition to the obvious domes advantage in saving time, worry, and fuel, there is dietetic advantage in that the starch-cells are mere swollen and not burst by this cooking and the "goo ness" is therefore conserved. The taste is certain

cellent.—[66] Radiation, Ltd. (15, Grosvenor-place, W. 1), showed an exhibit of gas-heated appliances dentists, and described by means of diagrams a ies of experiments undertaken in an attempt to prove the quality of the heat emitted by gas-grates d cookers by obtaining a softer and more penetrating ve-length.—[75] The "Vita" Glass Marketing ard (Aldwych House, W.C. 2) attended for the first ne to explain the properties and methods of fitting Vita" glass which, while transmitting a large propor- n of the ultra-violet spectrum, is indistinguishable m it in appearance, can be obtained from local ilders, and is entirely British.

Special Articles.

CONGRESS OF RADIOLOGY.

STOCKHOLM: JULY 23RD–27TH, 1928.

THE Second International Congress of Radiology ich met in Stockholm from July 23rd to 27th, der the presidency of Prof. GOSTA FORSSELL ockholm), was attended by 962 members from countries. T.R.H. the Crown Prince and Prince arles of Sweden were present at the inaugural eting in the Concert House, when Prof. Forssell eived the presidential badge, a gift from the itish Institute of Radiology, at the hands of Mr. C. urstan Holland and Dr. Stanley Melville, respec- ely president and secretary-general of the First ernational Congress held in London in 1925. e President then opened a discussion on Teaching l Training in Medical Radiology, expressing his n conviction that radiology has become so important medical science as a whole, and so firmly established a department of that science, as to make a systematic sentation of the subject an essential part of the neral medical education. He was followed by Dr. BELOT, speaking for France, Prof. M. HICKEY, U.S.A., Dr. G. HOLZKNECHT, for Austria, Dr. LVILLE, for Great Britain, and others, all whose pers will be published in book form as a supplement *Acta Radiologica*. The sectional proceedings of the ngress took place in the Riksdagshuset, being ided into (1) Rontgen Diagnostics, (2) Rontgen l Radium Therapy, (3) Radiobiology and Helio- rapy, and (4) Radiophysics and Medical Radiology. ogether 225 papers were read, one of which we olished in our issue of August 4th (p. 221); stracts of several others follow. In the first section umber of papers dealt with opaque injections into in and spinal column for the diagnosis of tumours l other diseased conditions of the central nervous tem (encephalography and myelography), into ale genital organs (hysterosalpingography), into neys (pyelography and pneumopyelography), as ll as the use of contrast means in the examination the accessory sinuses of the nose. In the second tion the chief interest centred around the radium atment of malignant tumours and the X ray atment of nervous disease of different kinds— erculosis, goitre, and diseases of the skin. The anisation and the results obtained at Radium- mmet in Stockholm were illustrated by a demon- ation of some 100 patients. In the third section pers were read on the effect of light in various eases, the action of ultra-violet rays on cells and ues, and the therapeutic value of irradiated oils. e fourth section had two main themes on its gramme: (1) the establishment of an international t of dosage in X ray treatment, to which a leading icle was devoted in our columns last week; and the question how to obtain international regula- ns for protection in radiological work. The latter to the setting up of an international committee carry out with a few small alterations the recommendations of the British X ray and Radium Protection Committee. During the Congress the International Committee of Radiology met and appointed an executive committee consisting of Prof. Forssell, Mr. Thurstan Holland, Dr. A. Béclère, Prof. W. Friedrich, Prof. M. Haudek, Dr. G. A. Pfahler, and Prof. P. Tandoja, which fixed Paris as the place for the Third International Congress in 1931, with Dr. Béclère as its president. An exhibition in connexion with the Congress comprised apparatus shown by 45 firms, of which 24 were from Germany, 7 from England, and 5 from Sweden.

Rationale of Radiation Therapy.

Invited to contribute a paper on this subject Dr. ROBERT KNOX (London) dealt with the radiation treatment of certain diseases, arranged for convenience of reference in groups. In the cases treated, at one period or another, a degree of control was obtained by systematic dosage; to ascertain the nature of this control innumerable observations were made in regard to dosage, absorption of the radiations, and the nature of the response of the tissues to these radiations. Two main fields of investigation were open: (1) the physical dose, and (2) the tissue response. It was decided to concentrate on one tissue and, because of the advantages offered by the blood, it was arranged, as a preliminary investigation, to explore the changes induced in blood and bone marrow by X rays of known wave-length. Mr. W. V. Mayneord made the precise physical measurements of the radiation. The tissue response was measured by Dr. A. Piney, who observed the hæmatological and histological changes in a number of animals subjected to measured doses of X rays. The direction of the experimental work was suggested by the clinical observations made in a case of myelogenous leukæmia where apparently a progressive action on the blood was induced by measured doses of radiations, and where after cessation of treatment, changes, quantitative and qualitative, continued for several months until a minimum count was reached. The animal experiments establish that radiations initiate a change which is progressive, and which continues after the cessation of treatment, and independently of subsequent procedures. The conclusions are to some extent analogous to those made by Dr. A. Leitch on the production of cancer in animals by repeated applications of tar products; when the tar had been applied frequently and for a certain length of time and the irritant was then removed, carcinomata made their appearance at a later date. Dr. Piney found the effects of divided doses to be more intense and more prolonged than those of a single dose, whilst also having a rather different qualitative result—namely, the former cause no alteration in the monocyte count.

Massive Collapse of the Lung.

Dr. L. R. SANTE (St. Louis, Mo.) and Dr. D. R. BOWEN (Philadelphia) both read papers on this peculiar condition in which one or more lobes of the lung, without apparent cause, suddenly lose their air content and become atelectatic. First described by W. Pasteur in 1890, the condition is scantily mentioned in the literature until recent years. With the loss of air content the lung becomes smaller, drawing the chest wall down with it, the mediastinal structures inward and the diaphragm upward as it collapses. The resulting atelectatic lung produces as dense a consolidation as pneumonia. These rontgenographic findings are characteristic. Dr. Sante has observed under direct fluoroscopic vision that such a fully collapsed lung can be caused to reinflate in many instances, merely by rolling the patient back and forth on his unaffected side and causing him to cough, and he suggests this as a method of treatment. Dr. Bowen emphasised the recent rediscovery of atelectasis as a post-operative complication with precisely similar conditions to those recurring with foreign body or infectious disease.

Radium Treatment of Intrinsic Carcinoma of the Larynx.

Dr. N. S. FINZI and Mr. DOUGLAS HARMER (London) described their method as closely resembling that employed at Bayet's Clinic. The incision starts at the centre of the hyoid bone and extends outwards and downwards along the posterior border of the thyroid cartilage. The thyroid cartilage is exposed, the perichondrium stripped from it and the greater portion of the cartilage then resected, making a large window. A number of radium needles are then inserted under the cartilage, great care being taken not to penetrate into the growth or into the larynx. The needles are parallel and are placed vertically, each one touching the next. The greatest care is taken to prevent sepsis. The threads attached to the needles are buried beneath the muscles and the wound is completely closed until the needles are removed from 4½ to 8 days later. If the anterior commissure is involved the other side of the larynx is treated in the same way. About 7 mg. of radium element is used if one side only is treated and about 12 mg. if both sides are treated. The filter is 0·5 mm. of platinum and the time from 4½ to 8 days. In some cases a small dose of heavily filtered X rays has been given two or three days before the operation. The closed wound having been sealed by a collodion dressing, a low tracheotomy is performed to avoid trouble from swelling of the glottis, which may result from the radium treatment; this tracheotomy is usually kept open for about six weeks. Fifteen cases have been treated with the following result:—

(1) In eight of these the growth was confined to one vocal cord and did not involve either the anterior commissure or the arytenoid cartilage. In six the growths entirely disappeared and the patients have remained well for periods of from one to three years. Gramophone records will be used to show the superiority of the results as regards function over those obtained by laryngo-fissure. In most of them the vocal cords have recovered to such an extent that it is impossible to detect on which side the growths were situated. In one case the growth diminished in size, but a stenosis of the glottis resulted and the patient died suddenly eight months later of unknown cause. In the eighth case no real improvement resulted from the treatment.

(2) Five cases were advanced, the disease having crossed the middle line in front and involved the other vocal cord, so that nothing except some form of laryngectomy was available as a surgical procedure. One has remained well for four years; his vocal cords are freely movable and appear normal, but the voice result is not as good as would be expected (gramophone record). In one case the disease in the larynx entirely disappeared, but the patient died later from a recurrence, which occurred in the tracheotomy wound a year after the treatment. Of the other three cases, one died during the operation, in one no improvement was noticed, and in one there was improvement, but later recurrence.

(3) Two inoperable cases in which the disease had extended into the larynx or through the laryngeal cartilages into the neck with enlargement of the cervical glands. In one the growth disappeared and the glands were removed by operation; the larynx remained healthy for two and a half years, but there is now a thickening of the vocal cord, probably due to a recurrence. In the other there was very great improvement, but the patient died after 15 months, probably from mediastinal metastases.

It is claimed that in operable cases the after-results as regards function are superior to surgical operation, and, if they prove to be permanent, will probably replace it. In advanced cases there seems no doubt, they say, that radium should always be tried before laryngectomy.

X Ray Therapy of Exophthalmic Goitre.

Dr. G. FORSSELL and Dr. O. SANDSTRÖM (Stockholm) gave a survey of experiences at Radiumhemmet of the X ray treatment during the period 1918–25 of 80 cases of typical morbus basedowii. In 57 cases the treatment was completed and the results controlled by re-examination of the patients. Of these 57 cases 30 (52·6 per cent.) are now quite well and able to work; 13 (22·8 per cent.) are much improved and able to work, but still have certain symptoms; 75·4 per cent., therefore, have been rendered able to work; 5 cases (8·8 per cent.) are improved, but n quite able to work, and as many (5) are unimprov or worse; there are 3 (5·3 per cent.) recurrences aft recovery or considerable improvement having last for some time; there has been one death. Appro mately one-fourth of the number of cases have be of severe nature, the rest of medium severity. T risk of rontgen treatment in expert hands is sligh Yet there is a certain risk of producing hypothyroidis particularly in case of the nutrition of the thyro being reduced by some operative interference precedi or following the X ray treatment.

Dr. A. SOILAND, Dr. W. E. COSTOLOW, and I O. N. MELAND (Los Angeles) gave a critical survey radiation therapy in exophthalmic goitre, as reveal by a questionnaire, and show that of 5400 cases treat 73 per cent. were cured, 16 per cent. improved, a 11 per cent. unimproved. Failures to respond to t treatment are attributed to poor selection of cases the part of the physician, lack of coöperation on t part of the patient, and lack of radio-sensitivity of t goitre. Whether or not this last cause is corre cannot be definitely decided at present, as improveme in technique may eliminate it. This analysis giv figures which are comparable to those obtained surgery, with the added advantage of no mortali due to the treatment itself.

X Ray Treatment of Multiple Sclerosis.

Stimulated by the published successes of Marines (1910) and Duhain (1911), Dr. A. Romanowa-Lesko and Dr. K. W. Ipatow (Leningrad) began the tre ment of *sclérose en plaques* by X rays in 1922, a reported good results in two cases at the Psych Neurological Society of Leningrad in 1924, and in total of 30 cases at the Physiotherapeutic Society Leningrad in 1927. Their cases now number 40, which only 28 have been observed for more than year; the remaining 12 were lost sight of after so improvement had been achieved. Treatment administered in seven sittings; at intervals 1–2 days the skull is irradiated three times, the ne once, the chest twice, and the sacrum once. T series is given ten times in the year, the whole cou being repeated after an interval of 6 to 12 mont Of the 28 patients, 22 showed more or less defin improvement up to clinical cure, including impro ment of gait and speech, disappearance of trem return of abdominal reflexes, and so forth. No c was completely unsuccessful, but six were o slightly bettered. Improvement may only be appar after several months or even years. The auth employed hard rays filtered through 4 mm. aluminium, and a dose not exceeding 25 per ce HED measured on the skin.

New Method of Treating Asthma by Radiation.

While working on a special technique for treat cancer by radiation at the London Hospital, Dr. S. SCOTT noticed that the method had a beneficial eff on asthmatical patients. A number of cases of asth of all types have now been treated; in really bad ca the results are often spectacular. When bronch is predominant, while the attacks of asthma may relieved, the bronchitis itself is but little affect Certain observations suggest some metabolic influe on the ductless glands—e.g., (1) beneficial results be obtained by radiation of the abdomen on (2) increase in body weight is in many cases rema able; (3) there is a general feeling of well-be experienced by most patients. The method require large radiation field and small dosage. The fi includes the whole trunk, the abdomen being important area. The tubes are centred over epigastrium and over a corresponding point posterio The voltage should not be above 170,000, a filter 3 mm. aluminium being used. Treatment is gi twice weekly in bad cases and once weekly in aver cases, four to six being the course. No blood chan occur and only slight nausea in a few patients. Scott reported on 130 cases so treated, and sugges

hat the same technique might prove of value is whooping-cough.

Treatment by Irradiated Oils.

At the instigation of Prof. S. A. Brustein, Dr. Th. Rothstein (Leningrad) began three years ago to employ external treatment of painful affections by means of compresses of irradiated oil. The technique consists in exposing the fresh oil, whether obtained from the sunflower, peach, nut, or cod liver, to 500, 1000, or 1500 ultra-violet units measured on the Falkindson photo-quantimeter. The 176 cases treated included polyarthritis 71, neuralgia 92, the most conspicuous result being in every case a reduction of painfulness and a parallel diminution of local heat. The compresses seem to the author to have their use in every case where direct ultra-violet treatment is used, with the added advantage of portability. The activity of the irradiated oils lasts at least 15 months, during which time the oils retain definite physical and chemical changes in viscosity, absorption spectrum, and iodine number.

MEDICINE AND THE LAW.

Chemist's Duty under Dangerous Drugs Legislation: Conviction Quashed.

UNDER the Dangerous Drugs Act and Regulations a chemist must not dispense a prescription containing certain drugs unless (*a*) he is acquainted with the prescriber's signature and has no reason to doubt the genuineness of the prescription, or (*b*) he has taken reasonably sufficient steps to satisfy himself that the prescription is genuine. If he dispenses prescriptions otherwise than in accordance with the Regulations, he commits an offence against the Act. For an offence of this nature Henry Clarence Thompson, a chemist, of West Derby-road, Liverpool, was convicted last June by the Liverpool Stipendiary Magistrate, and was fined £40 with £5 5*s*. costs. The charge was that of unlawfully dispensing a prescription for grs. 20 morphia sulphate to William Arthur Young without having taken reasonably sufficient steps to satisfy himself that the prescription was genuine. Against his conviction Mr. Thompson has now successfully appealed. It appeared from statements made during the proceedings that Young had posed as a doctor in Liverpool without possessing the requisite qualifications, that he had attended patients and had even certified a mental case. Young was convicted of wilfully and falsely pretending to be a doctor and also of obtaining certain quantities of morphia sulphate from two chemists; he was sentenced to imprisonment, which he is at present serving. It was stated that he had practised as a doctor in Canada but had got into trouble, and lost his qualifications and had been deported. The prosecution of Mr. Thompson was obviously a sequel to the prosecution of Young. The most important evidence called on Mr. Thompson's behalf was that of Dr. W. R. L. Waters, of Tue Brook, who had met Young. Young told Dr. Waters that he was a Canadian mental specialist who wished to set up practice in Liverpool. "I did not look him up in the Register," said Dr. Waters; "he was a convincing person and had a good knowledge of mental cases; he impressed me as a man of ability, and I was satisfied that he was a medical man; I allowed him to see one of my patients with me, and he wrote out a detailed history of the case—a mental one." In answer to the Recorder (Mr. Hemmerde, K.C.), Dr. Waters agreed that the more a chemist had examined Young, the more he would have been satisfied that Young was a doctor; he also said that he would not have hesitated to let Young look after his patients at a week-end if he had been going away. The Recorder said that if there was nothing to make Dr. Waters suspicious, there was nothing to make Mr. Thompson suspicious. The latter's appeal was allowed with costs.

One medical practitioner meeting another occasionally in the course of professional routine does not hold him at arm's length till he has obtained authentic evidence of his identity, qualifications, and registration. Similarly a chemist, who gradually becomes acquainted with the signatures of doctors who practise in his neighbourhood, can hardly be expected to go through a similar process when presented with a prescription over a signature with which he is unfamiliar. Is it to be deemed compulsory for a chemist to keep on his premises a copy of the latest medical list? If he does so, he may still be deceived by a forged signature, or conceivably the owner of the signature may have been deprived of his qualifications since the list was published. Nevertheless, the law requires that such reasonably sufficient steps be taken by the chemist as will satisfy him of the genuineness of the prescription; he must certainly not refrain from following up any point which arouses his suspicion. With regard to Dr. Waters's answers to the Recorder, it is doubtless unnecessary to repeat the warnings which appear in "The Conduct of Medical Practice." A practitioner who enters into partnership, or who engages the services of an assistant, must in every case verify the fact of registration. Dr. Waters would no doubt have taken this step before entrusting any of his patients, for however short a time, to Young.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Medical Research.

Sir Robert Philip's report, as curator of the laboratory of the Royal College of Physicians of Edinburgh, shows that the 24 investigators there have been doing good work on many different subjects. The use of taurine in tuberculosis has been further studied, and its influence on the disease has been found to be comparatively slight. The curator, with Prof. T. J. Mackie, has been doing research bearing on the standardisation of tuberculin; the superintendent (Lieut.-Colonel A. G. McKendrick) and Dr. W. O. Kermack have been carrying on their work on the mathematical theory of contagious epidemics, and Colonel McKendrick has also published a statistical examination of antirabic treatment in India. He has further collaborated with Dr. Kermack and Dr. Eric Ponder in their research on the sedimentation of red blood cells, whilst Dr. Kermack has, with various collaborators, investigated the chemistry of harmine and other alkaloids, the rôle of dihydroxyacetone in carbohydrate metabolism, and the physical properties of Wassermann antigens. Mr. C. I. B. Voge has continued his studies of the reactions of syphilitic and normal sera; Dr. C. G. Lambie and Dr. F. A. Redhead have made some interesting observations on the influence of pituitrin on the metabolism of glucose and dihydroxyacetone; Dr. David Orr has investigated the changes to be found in the nervous system of animals receiving intravenous injections of bacterial emulsions, and Dr. Donald Stewart has carried to a further stage his work on the chemistry and cytology of the cerebro-spinal fluid in children. Lieut.-Colonel W. F. Harvey, a newcomer to the laboratory, is examining Gram's method of staining unicellular organisms, and has found efficient substitutes for the alcohol, aniline oil or phenol constituents of the dye. He is also studying the parenteral introduction of foreign nerve material into rats. Other subjects being dealt with are the conditions which favour heat-stroke, the infection of children by pulmonary diseases, the pathology of deaf mutism, the histopathology of the skin, the types of tubercle bacilli found in surgical lesions, and the icterus index of serum in cases of jaundice.

Status of the Sanitary Inspector.

At the annual conference of the Sanitary Inspectors Association, held at Dunfermline, Dr. Frederick Dittmar, Chief Medical Officer of the Scottish Board

of Health, pointed out that the days were gone when it was believed that a policeman or a plumber should occupy the position of sanitary inspector. Generally speaking, the sanitary inspector nowadays had to know something about buildings, building construction, meat inspection, and dairy work, so that he must be a man of fairly wide training. He should have a first-class school training, and ideally should occupy some position similar to that of the articled pupil in the engineering trade, who first had his theoretical training, and then had to go through the shops. Something in that line would have to be marked out for the sanitary inspector of the future, and Dr. Dittmar thought it by no means impracticable. The status of the sanitary inspector might then take care of itself.

Factory Work and Welfare.

The report of the Chief Inspector of Factories and Workshops shows that there were over 18,000 accidents in Scotland last year, of which 145 were fatal. The deaths of two men who had for many years been employed in the manufacture of sheep dip present puzzling features.

The first man, who had been engaged in the manufacture of dip for over 30 years, died from chronic arsenical poisoning, bronchitis, and emphysema. The senior medical inspector (Dr. J. C. Bridge) remarks that in this case no lesion of the skin—a characteristic effect of arsenical poisoning—was observed, and as no autopsy was held, the association of arsenic with the cause of death remained obscure.

Inquiry was made into a somewhat similar case affecting a man, aged 51, who had been employed for 29 years also in a sheep dip works, although since 1923 he had been removed from contact with arsenic. Dr. Bridge states that "on three separate occasions growths had been removed from the skin, and in this case the post-mortem examination revealed the presence of chronic bronchitis, which might have been due to the exposure to arsenic dust, but this was not clearly established. A full investigation of cases such as these is of undoubted value."

A firm engaged in the manufacture of sheep dip has installed baths, and has made the taking of them a condition of employment of all those in contact with arsenical compound. Although there was, it is stated, a little difficulty at the outset, this was easily overcome, and subsequently these baths were made available for other employees, male and female.

Continued progress in improvement of welfare conditions is reported. A large printing and publishing firm in Lanarkshire has taken advantage of the decision to construct an up-to-date factory on model lines to launch an ambitious and comprehensive scheme of welfare work. Embodied in the design of the factory itself is every modern improvement that makes for efficiency and general welfare. The site has been chosen in the country, but by reason of excellent and cheap travelling facilities, the city centre is not far distant. The kitchen is entirely electrical, and meals are to be provided for the workers at prices scarcely above cost, whilst, for those who prefer to bring their own food, specially designed warming cabinets are provided. The lavatories are described by the works manager as probably superior to those in the best hotels of the country, and a separate self-locking lavatory has been allotted to each group of 20 workers, every worker being provided with a key.

V.A.D. Road Services.

At the Voluntary Aid Detachment gathering at Aboyne, the proposal was discussed to utilise the services of V.A.D. nurses for first-aid and other work in connexion with road accidents. Dr. J. C. M. Matheson, of Laurencekirk, said that headquarters had expressed their approval of the scheme, and he was hopeful of seeing all arrangements in Kincardineshire completed shortly. War was a very remote possibility, and a vigorous effort should be made to deflect the training and experience of many capable nurses into the service indicated.

The movement is also receiving support in Aberdeen, and is expected to spread to other counties in Scotland.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Censorship of Publications.

IMMEDIATELY before the adjournment of the D the first reading was taken of the Censorship Publications Bill, 1928, a measure designed to prohi the sale and distribution of unwholesome literatu The text of the Bill has, however, been issued on within the past few days. Apart from its pure moral and social aspects the Bill has special intere for the medical profession. It is proposed to set up board of five censors, on the report of four of whom t Minister of Justice may issue an order prohibiting t sale or distribution of a book regarded by them indecent or obscene, or tending to inculcate princip contrary to public morality, or of such character th it tends to be injurious or detrimental to or subversi of public morality. Similar action may be taken regard to a periodical, recent issues of which may adjudged to have offended. Disobedience to an ord may be punished by fine or imprisonment, or both, an in any case, forfeiture of the book or periodic Special sections limit the publication of certain matte in relation to divorce proceedings or other proceedin dealing with the marital relation, and legal proceedin in general. The Bill, however, goes much further th this. It prohibits, otherwise than in accordance wi a permit granted by the Minister, the publicatio selling, or keeping for sale, and the distribution any book or periodical which advocates or mig reasonably be supposed to advocate the unnatu prevention of conception or procurement of aborti or miscarriage, or any method, treatment, or applian to be used for the purpose of such prevention procurement. Moreover, the printing of adverti ments which relate or refer to any disease affecting t generative organs of either sex, or to any compla or infirmity arising from or relating to sexual int course, or to the prevention or removal of irregularit in menstruation, and certain other matters, is brou under the Indecent Advertisements Act of 18 Another section deals with the exposure of indec pictures.

Much of the proposed legislation deserves co mendation. The prohibition of the advertisement quack cures for venereal diseases and of "cures female irregularities" is long overdue. Few v quarrel, except perhaps on academic grounds, with limitation of the reporting of divorce and similar le cases—a reform already adopted in England. But virtual branding of propaganda in favour of bi control as indecent will take many aback. The eth of birth control are a subject of lively controversy the moment, and the ethical question can hardly settled by a legislative enactment. In regard to ot matters there is a grave danger that if a board puritanical or uncultured censors should be appoint both literature and art would speedily feel themsel cramped.

Royal Institute of Public Health.

The annual congress of the Royal Institute Public Health was opened in Dublin last Tues evening by a reception given by the Minister of L Government and Public Health, who is President the Congress. On the following and subsequent d the several sections met for discussion.

A LANCASHIRE REST HOME.—The Directors British Insulated Cables, Ltd., of Prescot, Lancashire, bought Upper Downing, Flintshire, for a rest home as of an after-care scheme for sickness and accident cases an their employees. The cost of maintenance will be defr by the Hospital Fund Committee of the employees. U Downing, which by now has been opened, was buil 1589, but was remodelled in the Georgian period. stands close to Downing Hall, long the home of Tho Pennant, traveller and naturalist.

GENERAL MEDICAL COUNCIL.

EXECUTIVE COMMITTEE.

T a meeting of the Committee, held on July 23rd, Norman Walker was appointed a member of the tal Board in the place of the late Sir James sdon.

Restorations to the Register under Section 14.

he following names, erased owing to failure to y to the Registrar's inquiry, were restored to the ical Register :—

omas Allen, Robert J. Baylor, Chas. Wm. Dixon, Douglas, John Dwyer, Mervyn Eager, Lennard Game, ld W. Hodgson, M.C., Elizabeth S. Martin, Vivian hew Matthews, Evelyn Arthur Rich.

Direct Representative.

letter was read from Sir Robert Bolam, resigning membership of the Council as a Direct Repre- ative on his appointment as Representative of University of Durham. The vacancy thus caused be filled by an election to be held before the ember Session, at the same time as the election Direct Representative to fill the vacancy caused he death of Dr. Macdonald.

Union of South Africa Medical Act.

copy of this Act, which also relates to the man- d territory of South-West Africa, was received the Dominions Office. This Act provides that Governor-General, after considering any recom- dation by the Council, may prescribe by regulation diplomas, &c., which entitle to registration vided that they entitle the holder to practise in country in which the body granting it is situated, there is reciprocity between the Union and the ntry, and that the standard is not lower than that uired in the Union. The Governor-General may e regulations for the registration of medical and al students. Any unregistered person who tises as a medical practitioner, or performs any specially pertaining to the calling of a medical titioner, or pretends to be a medical practitioner, able to a fine not exceeding £100. There are lar penalties provided in regard to dentistry. use of the British Pharmacopœia is enjoined. registered person may make extortionate charges services rendered, and if the fee exceeds that lly charged he must, before rendering the service, rm the person concerned of the fee which it is nded to charge. Persons mentally disabled may uspended from carrying on their profession.

North Australia.

formation was received from the Dominions e relating to the practice of medicine and surgery he Territory of North Australia. It appears the South Australia Acts of 1844, 1880, and 1889 in force in 1910 when the Northern Territory e under the authority of the Commonwealth, still hold. The Act of 1844 states that no one l be deemed a legally qualified medical prac- ner unless he shall have proved to the satisfaction he Medical Board that he held a satisfactory ification. In the Act of 1880 this was repealed, it was enacted that no one was to be deemed edical practitioner unless he possessed one of the lifications contained in the Schedule. The dule, however, was not supplied. In the Act 89 the Schedule was repealed, and a new Schedule appended, which included any qualification tling to registration in the United Kingdom, a ee of any University in Australasia legally orised to grant it, and a degree or diploma ted by any body in a British Colony or Possession, ny foreign University which in the opinion of the ical Board was equal to a qualification entitling gistration in the United Kingdom.

Indian Qualifications.

A communication from the India Office supported a request by the University of Bombay for the extension of the recognition of its M.B., B.S. degree of the University for a further period of three years. The question of appointing a Commissioner of Qualifications and Standards pending the creation of a Medical Council for India has, it was stated, been referred by the Government of India to the local Governments for their consideration. Their replies have not yet been received. It was resolved to recognise for one year the medical degrees of Bombay, Calcutta, Madras, and Punjab Universities, until July 31st, 1929, subject to the receipt (before July 1st, 1929) by the Council of a satisfactory report by an inspector or inspectors appointed by the Government of India and approved by the Council on a Final Examination held in the academic year, 1928–29.

Training of Midwives.

In view of the appointment by the Ministry of Health of a Committee to deal with the functions and training of midwives, it was resolved to ask Sir Donald MacAlister to attend before the Committee on Oct. 24th to explain the general views of the Council, and to introduce Mr. Eason, Sir Leslie Mackenzie, and Mr. Johnston, who should be requested to give evidence relating to the three divisions of the Kingdom.

Definition of Abortion.

At a previous meeting of the Committee, doubt was expressed as to whether the definition of "abortion" in the amended Rules of the Central Midwives Board was sufficiently clear or accurate. The Ministry of Health stated that the definition had been altered to read as follows :—

"The passage of the contents of the uterus before the fœtus is viable—that is, of an age at which it may be reasonably expected to survive. (Note.—For practical purposes a fœtus is not viable before the twenty-eighth week of pregnancy.)"

Obituary.

GEORGE EDWARD WHERRY, M.CHIR. CAMB., F.R.C.S.ENG.

WE regret to announce the death of the well-known Cambridge surgeon, Mr. Wherry, which occurred on August 12th, in the seventy-seventh year of his age. The whole of his professional life was spent in the University city, and the number of Cambridge medical graduates who have regarded him as a friend, both during their undergraduate days and later, must be enormous.

George Edward Wherry was born at Bourne, in Lincolnshire, received his early education at the local grammar school, and, entering the medical school of St. Thomas's Hospital in 1870, obtained his first diploma, M.R.C.S.Eng., at the age of 21. From St. Thomas's Hospital he proceeded to Cambridge as house surgeon at Addenbrooke's Hospital, being admitted at the same time to Downing College as an undergraduate of the University. He held the resident post at Addenbrooke's for four years, and during that time graduated in arts at the University. He took the M.B., B.Ch. degree in 1878, and in the following year he proceeded to that of M.C. In the same year he took the Fellowship of the Royal College of Surgeons of England, and was appointed surgeon to Addenbrooke's Hospital.

In 1883 Sir George Humphry, to whom Wherry owed his original connexion with Addenbrooke's Hospital, resigned the Professorship of Anatomy to take the new and unpaid Professorship of Surgery, and in the same year a University Lectureship in Surgery was established, when Wherry was appointed to the post and held it until its suppression nearly thirty years later. He was never actually Professor

of Surgery. This post was not filled up for seven years after Humphry's death in 1896, when in 1903 Howard Marsh, while still connected with St. Bartholomew's Hospital, was invited to the chair. Four years later Marsh became Master of Downing College, and held the post of Professor until his death, since which it has not been filled up. But if Wherry was never professor in name, no professor could possibly have been more closely associated with the science of surgery as a University subject or more keen for its development than he was. He lectured assiduously, held clinical classes in the wards, acted frequently as an examiner, and supervised during the ten years immediately following the death of Howard Marsh the whole surgical faculty of the University.

Outside his professional work Wherry was well-known to a large circle as an Alpine climber, an antiquarian, and a man of diverse and highly cultivated literary tastes. He married in 1881 Albinia Lucy, daughter of Robert Needham Cust, of the Bengal Civil Service, by whom he had one daughter, who became the wife of Major R. W. Oldfield, Military Attaché to the Legation at Prague.

CHRISTOPHER CHILDS, M.D.Oxf., D.P.H.Camb.

THE death took place on Monday, August 6th, at his residence, Rock House, West Looe, Cornwall, of Dr. Christopher Childs, a well-known pioneer in sanitation and epidemiology. He had reached the age of 81.

Christopher Childs was born at Liskeard, and received his early education at Uppingham School, where he was distinguished alike in work and play, being an exhibitioner, a great runner, and the captain of the football fifteen. From Uppingham he proceeded to Merton College, Oxford, and graduated with a first class in the Natural Science Tripos. Deciding to enter the medical profession, and having won the Radcliffe Trust Special Prize, he completed his clinical course at St. George's Hospital, took the diplomas of the English Colleges, and became house physician to the institution. London practice, however, had no great attraction for him, and for a short time he returned to his old school as science master, when he was able to assist the famous head, Edward Thring, during a dramatic transference of the school from Rutlandshire to Wales, following upon an outbreak of typhoid fever. In 1882 he decided to commence general practice at Weymouth, and for some 12 years he conducted a large practice in that town and neighbourhood, but again he felt that he had not found the career that most appealed to him. At this time the problems of public health and sanitation became more obviously attractive to the medical man with special scientific equipment. In 1895 Childs acquired the diploma of D.P.H. at Cambridge, and left Weymouth for Manchester-square to practise as a sanitary expert. He was accepted quickly as an authority, wrote ably upon epidemiological subjects, and in particular made some comparative studies of typhoid fever epidemics which well represented the knowledge of the time. He lectured on bacteriology and hygiene at University College, London, and examined in those subjects for the English Conjoint Board.

He retired, however, while still in middle age, and removed to Looe, where he passed the last twenty-four years of his life devoting himself to the public welfare of the town, and, indeed, of his native county, being particularly interested in the fortunes of the Cornish fishing industry and the promotion of ambulance work. He was a Knight of Grace of the Order of St. John of Jerusalem.

One who had been his pupil at Uppingham writes: "Childs was a man whom those of his juniors who came into contact with him will always remember as an old friend. Uppingham, during his brief term of office as a science master, was mainly a classical school, and it is doubtful if Childs would have occupied a position of real authority among us l it not been for his personal kindliness and his rec on the playing field as athletic champion and capt of football. But the few of us who worked un him in his simply equipped laboratory gained insight into the beginnings of scientific work wh made the later approach to serious study far eas for us."

Dr. Childs married Miss Anne MacRea, of Weymou who predeceased him, and by whom he had one s

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The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. S. G. Rainsford to be Surg. Lt.-Comdr.

The following appts. are notified: Surg. Rear-Adm H. C. Whiteside is placed on books of *President* w attending conference of Association of Military Surge of the United States. Surg. Comdrs: F. C. Wright *Vindictive;* A. C. Anderson to *Argus;* J. Bourdas to *Vic* for R.N. Barracks, Portsmouth; and H. M. Langdale *Vernon.* Surg. Lts. E. T. S. Rudd to *Pembroke* for R Infirmary, Chatham; T. Rees to *Hood;* A. S. Nico *Impregnable;* D. R. Campbell, L. J. Corbett, and S Savage to *Broke* (on recommg.). Surg. Lt.-Comdr. B. J. Geekie to *Malabar* for R.N. Hospl., Bermuda.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. W. C. Croly retires on retd. pay.

Maj. C. Clarke, Reg. Army Res. of Off., relinquishes appt. and resumes the rank of Lt.-Col.

The undermentioned Lts. (on prob.) are confirmed their rank: F. McL. Richardson, J. W. Eames, and S. R Mackay.

TERRITORIAL ARMY.

Capt. E. White (late R.A.M.C.) to be Lt. and relinqui the rank of Capt.

W. F. Mulvey to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. A. Greenwood, having attained the age li relinquishes his commn. and retains his rank.

ROYAL AIR FORCE.

Flight Lt. H. W. Corner is granted a permanent commis in this rank.

Capt. W. R. Wotton (Army Dental Corps) is grante temporary commission as a Flight Lt. (Dental) on att ment to the R.A.F.

Flight Lt. (Hon. Sqdn. Ldr.) J. W. H. Steil relinqui his temporary commission on completion of service an permitted to retain his rank.

INDIAN MEDICAL SERVICE.

C. L. Noble to be Lt.

Sunderdas Tulsidas Sodah to be Temp. Lt.

ROYAL ARMY MEDICAL COLLEGE.

The following prizes were awarded at the conclusio the summer course for Lieutenants on probation, R.A.M and I.M.S., at the Royal Army Medical College, Grosve road, London, S.W.: Herbert prize (about £20): Hig aggregate marks, Lt. F. McL. Richardson, R.A.M First Montefiore prize (£20 and bronze medal): Hig marks in military surgery, Lt. A. McMillan, R.A.M Second Montefiore prize (£7): Second highest mark military surgery, Lt. S. S. Bhatnagar, I.M.S. Pa Memorial (medal and £5): Highest marks in hygiene, F. McL. Richardson, R.A.M.C. Ranald Martin (medal £5): Highest marks in tropical medicine, Lt. F. M Richardson, R.A.M.C. Tulloch Memorial (silver me Highest marks in pathology by an R.A.M.C. officer, G. T. L. Archer. Fayrer Memorial (bronze med Highest marks in pathology by an I.M.S. officer, Lt. C. Cropper. De Chaumont prize: Second high st mark hygiene, Lt. S. R. M. Mackay, R.A.M.C.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Changes in Pensions Administration.

EFORE the prorogation of Parliament, on Friday, ıst 3rd, some important questions of policy in the sment of post-war disability pensions and the medical ment of pensioners came up.

ı the motion for the third reading of the Consolidated l (Appropriation) Bill,

r ROBERT HUTCHISON said, in view of the important ment made by the Minister of Pensions recently, he that opportunity of raising some important points. e was one point in the statement on which he would some elucidation—namely, the question of allowances reatment. They had now got so far away from the that many of those who were still suffering from ads, from the affects of gas, and from nervous disability l be considered chronic, and their condition was on a different plane from what it was ten years ago. He ested that there were a great many cases which would uch better cared for in regular institutions where their ition might be ameliorated. They knew of cases where le had been sent for treatment again and again by cal boards, and the nervous exhaustion of the individuals had to undergo that treatment, and in some cases ations, was pitiful. Some attention ought to be given is very serious matter. His next point was as to the inuance of re-examination before medical boards for sessment of pensions in quite a small number of cases. argument was used that after a final assessment and the ıg of a final pension there were cases that got worse; statistics would prove that almost 95 per cent. of the s that had been given final awards did not come up for sessment. It seemed to him that the time had arrived h the Ministry should deal generously with the remaining s, and give them a final pension, even though it might o the detriment of the State. The amount of money lved must be small compared with the total expenditure. Government might also consider a definite proposal for ng down the Ministry of Pensions step by step over a od of a few years. Large blocks of people could be ı a statutory right to their pensions which would be through the Post Office, and the cases which fell for inual attention might be handed over to institutions, o the care of the medical authorities through the stry of Health. In that way money could be saved direction in which, at present, there was extravagance dering the work which had to be done. The statement e by the Minister as to the stabilisation of pensions had ened the hearts of many, but the more they could down the Ministry the better it would be for all erned.

r. F. ROBERTS said that the House agreed that the rnment had taken the right and proper course in the lisation of war pensions. He would offer resistance to R. Hutchison's proposal with regard to the closing ı of the Ministry of Pensions. They recognised that must be some contraction of the work, but the more looked around the more they understood how big the tion was that confronted them, and how important it to have a Minister in the House of Commons who l be questioned in regard to the problems affecting ervice men. It was essential to maintain this Depart-, with its voluntary workers and officers throughout country, in order to keep in operation that human ı which was more necessary in connexion with ioners than perhaps any other department of our social If the Minister of Pensions and the Government were prepared to accept the view that there should be no limit, and that if a man was suffering from a war ility, he should thereby be entitled to pension, then he Roberts) would ask the right hon. gentleman to what at he was prepared to go in meeting the needs of those asthenic and tuberculous cases which from time to time such a source of great anxiety. He would also like to he Minister whether it was his intention to provide special ment for border-line cases, in regard to which it was tful whether the policy applied was that which Parlia- and the country desired.

The Future of the Ministry of Pensions.

eut.-Colonel FREMANTLE said he would like to speak the point of view of the medical service and medical nistration in the Ministry of Pensions. It was some- forgotten that the Ministry of Pensions was a most ntial part of the health services of the nation, although it was divorced from the general health services. They were all immense admirers of the Minister of Pensions and the work of his staff, but the stoutest defender of the Ministry as a separate entity must admit that it would come to an end one of these days, and it was right that they should envisage the future and try and consider to what extent it was likely to be changed. After they had stabilised the greatest number of pensions this largely became a medical question. From the medical point of view one obviously supposed that before the general body of pensioners had passed into another world rather than have the whole system of treatment of the few that remained die of inanition, the duties of the Department would have to be passed over to some other Department, and the question was how soon that should take place. It was quite true that that was not a question of immediate politics; but it was obvious that sooner or later the responsibility for the institutions and the personnel would have to be transferred. The natural body to complete and wind up the service would seem to be the Ministry of Health, but that would associate itself in their minds with the poor-law guardians, and there had always been a great and natural reluctance to imagine the possibility of in any way fusing this service with the service of the poor-law guardians. The proposal of the Government in the big Bill foreshadowed for next session was, however, to transfer the whole system of the poor-law into the hands of larger authorities—the county councils and the county borough councils—and he thought they would there have a new envisagement of institutional treatment and public health. They would have larger authorities possessing an enlarged service of institutions with a very large field of employment; because, if the new Bill passed substantially in the form in which it was proposed, they would be taking over the whole of the services of that kind, whether they were in the hands of the guardians or those of the district sanitary authorities. He was not going to say straight away that that in itself would qualify them to take over, or operate, the services of the Ministry of Pensions, but it was obvious that it gave them a prima facie reason for believing that they would be the body for that purpose. All that, however, was in the future, and they would, first of all, have to see how this reform worked out. When the counties had produced their schemes and got to work for a year or two, it would be possible to judge whether they would be able to relieve and help the Ministry of Pensions in this work. The Minister would have to consider what was to be the future of his institution and his personnel. The personnel must be a gradually diminishing one, but it would be a very difficult thing to know how to deal with it. There was a whole series of eminent medical men who had given themselves up to the Pensions service, who were chosen for work at the end of the war as the result, perhaps, of their war service, and it would be a difficult thing to turn those men out of the service and give them no future at all. In the same way with institutions; it would be a bad thing to see institutions contracting and becoming less efficient while they had to undertake big schemes for their fusion with all the geographical difficulties that would entail on pensioners and in other directions. Therefore, it was right that the Ministry should envisage the possibility of bit by bit gradually working in and coöperating with the Ministry of Health, and eventually the county and county borough councils, for the gradual fusion of the two services for which, in so far as pensions were concerned, the Ministry of Pensions would naturally retain its responsibility. Only at a later stage would the Minister transfer the institutions to the Ministry of Health.

They had to consider yet another side, and that was the future of the whole of these institutions with their personnel, and this service which had been built up by the present Minister of Pensions and his predecessors. They had developed a new medical science. This subject of the assessment of liability and the attributability of disease to war, with all its difficulties, had been developed by this service, and had become a fine art akin only to the medical service in connexion with insurance. It would be invaluable to the nation as a whole. The institutions with their specialist forms of treatment, as well as their general forms of treatment, had attained a very high professional position, and a high degree of skill and equipment. The great pity was that that should not be made available to the civil population in the future. If the personnel and the institutions were left gradually to slide down and down, though living an independent life, they would lose their standing and value in a large degree before they were transferred to the civil side. The Minister of Pensions should be considering in what way he could coöperate with the Ministry of Health and the other civil authorities in catering for some of the civil needs of the population, and in that way help to keep alive his institutions and maintain them at their highest possible pitch of fitness.

Dr. DRUMMOND SHIELS said he was unable to join in the mild congratulations which had been generally given to the

Minister, because he was thoroughly dissatisfied both with the policy and the spirit of the Ministry of Pensions. He agreed that it was very desirable that they should have had an intimation that week on the stabilisation of pensions, although in effect it only meant that after 1931 the present position of pensions was to continue. He did not criticise the present Minister specially, except that he thought he had been more accommodating to pressure from the Treasury than any other Pensions Minister. The Pensions Ministry had been under the domination of the Treasury ever since January, 1920. He could bring forward any number of cases which had gone through his hands where men had undoubtedly suffered in health very seriously because of the war but were receiving no pension, or only a miserable pension. Lieut.-Colonel Fremantle had spoken about the medical point of view. He (Dr. Shiels) was not particularly concerned at present about the future organisation of the Ministry. The medical point of view in which he was interested in connexion with the Ministry of Pensions was the way in which the Ministry turned down the opinions of medical men, not only panel doctors, many of whom were extremely and naturally indignant, but also well-known specialists, whose opinion was flouted by the Ministry of Pensions. He was not sure that it was by the medical men in the Ministry of Pensions. The medical men in the Ministry were not supreme. But they all knew of cases where a man was told that his case was one which made home treatment suitable; he did not require any hospital treatment, but his case could be dealt with by his panel doctor. He went to the panel doctor, and the panel doctor examined him and said that in his opinion the man required either hospital treatment or specialist treatment, and sent him back to the Ministry. Then the man was pushed backwards and forwards and was refused the treatment which the panel doctor thought was desirable. Even the opinions of medical specialists were set aside. He (Dr. Shiels) thought the Ministry of Pensions should give more heed to the opinions of conscientious medical men who knew the patients, and in many cases knew them before the war, and who understood the change that had taken place.

Mr. MONTAGUE said he did not altogether agree with Dr. Shiels in reference to the point raised by Lieut.-Colonel Fremantle, because he thought that Colonel Fremantle's reference to the use of an efficient State medical service for the civil population was a very big advance towards the point of view that the Labour Party held in regard to medicine and the nation as a whole.

The Minister's Reply.

After further debate,

Major TRYON, Minister of Pensions, said that as a result of the work of a committee presided over by Sir Godfrey Collins, the problem of artificial limbs for ex-Service men had been most satisfactorily settled. He believed that the limbs now supplied were probably the best supplied by any country which took part in the war. He had seen a suggestion that the 6000 men who had lost their reason would get nothing if it was not for the ex-Service Men's Welfare Society. That was a statement which no doubt enabled the Society to obtain funds from the charitable public, but it was absolutely untrue, because that Society under the law was not able to deal with a single one of the 6000 mentally afflicted men in the asylums; and so far from it being the case that the State had done nothing for them, the State had for many years past been spending about £3,000,000 a year on mental cases alone. The doctors of the Ministry were doing a wonderful work for these cases. He did not think the country generally realised how much the ex-Service men owed to the wonderful work which had been done for the sick and disabled by the medical staff of the Ministry. It was true, as Colonel Fremantle had said, that medical science had advanced, and he was glad to see that in a hospital which had hitherto been doing much work for the ex-Service men the great experience gained in connexion with the loss of limbs had been used to help railway men who had lost their limbs in civil employment. In that way they hoped to carry on the medical experience gained through these terrible sufferings, in order that the knowledge so obtained might be of assistance in civil life to other sufferers.

The Bill was read the third time.

SHEFFIELD PENNY-IN-THE-POUND SCHEME.—It is officially stated that this fund will this year be able to distribute £100,000 among the four Sheffield hospitals. Last year the amount so distributed was £88,809, out of a total of £116,816. The balance was expended upon the ambulance, convalescent, and other services. At the end of 1927 the joint debt of the Sheffield hospitals was £59,000 as against £111,000 twelve months earlier.

Correspondence.

"Audi alteram partem."

THE HEART AND CIRCULATION IN BERI-BERI.

To the Editor of THE LANCET.

SIR,—In the St. Cyres lecture, published in your issue, Prof. Wenckebach has dealt with the prob of the beri-beri heart, and has supplied a most in esting and suggestive explanation of the difficulties with. At the same time he has introduced a new of the mechanics of the heart and circulatio connexion with the action of the right and ventricles. This new view may be correct, but a acceptance entails the dropping of well-establi beliefs some caution is required.

The leading features of the beri-beri heart w appear to be dilatation and weakening of the ventricle, weakening of the left ventricle, increa stasis in the liver and venæ cavæ, and a pulmo circulation completely free from any sign of st These phenomena taken by themselves would su a condition of congestive heart failure, but Wenckebach has accepted the statements of authorities on this disease that the chief lesion the right ventricle, and that the circulatory dist ances are due to its failure. He says that cli experience has taught him "that in cases of increa insufficiency of the whole heart the right hea doomed beforehand to suffer much more than the and even to suffer to the profit of the latter." can only be tested by the effect on the circulation cases of the beri-beri heart the pulmonary circul goes on unimpaired, so that one may assume an ciency of action and an absence of suffering as reg the right ventricle. On the other hand, congesti the liver and large veins, with a feeble apex beat a weak, rapid pulse, suggests that it is the left vent which is in difficulty. The teachings of cli experience as given above may be right or ma wrong, but they do not seem to find much suppo the clinical features of the beri-beri heart.

The great function of the right ventricle is to on the pulmonary circulation. In the beri-beri h the weakened and dilated right heart develops in petence of the tricuspid valve; Prof. Wencke says that "blood passes from the right heart backw into the veins and liver, and the arterial output o right ventricle is greatly reduced." Here we hav back-pressure theory in all its nakedness, but in of this failure of the right heart, "there is no lung s no râles, and no pulmonary œdema." In short, disabled and dilated right ventricle is carrying o normal function most efficiently, and at the same is doing extra work in pumping the blood back int venæ cavæ and liver until they are gorged with b But this is not all the trouble of the right vent "The right heart has to deal with the whole volu blood returning from the periphery to the h *the left heart not receiving more blood than the right is able to transmit.* Consequently the right heart the time struggling for life against an ever-increa overfilling and widening, but the left heart is sp a similar burden." But why this life and death str of the right heart? Is it so clear that it is the a of the right heart which has over-distended the cavæ and liver? No action or inaction of the ventricle can produce such stasis of the venæ and liver when at the same time an efficient pulmo circulation is being carried on. One can conceive the right heart may fail to carry on an efficient monary circulation, with some reflux through tricuspid valve, or that the right heart may carr the pulmonary circulation efficiently without reflux, but one cannot conceive that the right should be carrying on the pulmonary circul

ccessfully and at the same time be pumping the liver l of blood. The closing stages of the beri-beri heart e no less puzzling, for now, at long last, the left ıtricle comes into the picture. "At the last moment fore death the latter loses its systolic power, cumbs, and leaves the lungs with stagnating blood d signs of ante-mortem œdema." Surely these lmonary signs are to be traced to a failure in action the right and not of the left ventricle, and they ppen to be the first unequivocal signs of right-sided lure which the lecturer has described in connexion h the beri-beri heart.

Prof. Wenckebach seems to have accepted the statents of the authorities on beri-beri as to the special diac changes present, and on this basis he has built ıew theory of cardiac physics. He promulgates a w law of the heart as follows: "In equal and reasing feebleness of the whole heart muscle the ient suffers most and dies from the failure of the ht side of the heart only." The beri-beri heart may uire new views of the circulation and new laws of action of the two sides of the heart, but there is l something to be said for the old ones. In the i-beri heart the left ventricle is weakened and rate is increased. The signs of right-sided failure which so much stress has been laid might more ıvincingly be explained by failure of the left ıtricle. The engorgement of the liver and large ns, ascribed to the back pressure from the right heart, now usually ascribed to the diminished forward ssure of the left ventricle. It is the characteristic n of a failing left ventricle. The total absence in i-beri of signs of disturbance in the pulmonary culation—no stasis, no œdema, no dyspnœa—uld indicate a right ventricle working at its ease and ll within its powers. The arterial output of the ıtricle must be quite up to normal, and if at the ne time it is pumping blood into the liver, while its scle is seriously weakened by disease, we have indeed henomenon which requires some new law.

Prof. Wenckebach was an honoured guest of the yal College of Physicians at the recent Harveian brations, and saw the demonstration by Sir Thomas vis of Harvey's original experiments. Might I gest that he test the truth of his new views, in the nner of Harvey, by some physiological experiments show the circulatory correlation between the two es of the heart? It was not Harvey's theories, but experiments which carried conviction to the ptics of his time, and no doubt the same would ly to-day.

I am, Sir, yours faithfully,

ondon, August 12th, 1928. G. A. SUTHERLAND.

HERPES ZOSTER AND VARICELLA.

To the Editor of THE LANCET.

IR,—I read with interest the note on p. 264 of E LANCET, August 4th, and while reports of the elopment of the two maladies side by side are now frequent to be of much interest, yet I cannot ain from mentioning a small epidemic of chicken- I saw recently. Occurring as it did in an isolated nd district where there was little possibility of side infection the relationship between the illnesses s very definite.

n Jan. 6th last I was called to see a case of herpes er in a woman who had a definite history of previous ility and gastric disturbance. The rash had developed days before and was unilateral along the course of the t seventh intercostal nerve. On Jan. 12th I was called ee her son aged 25 who had a most profuse and typical cella with considerable constitutional disturbance, uding a sore throat and total suppression of urine for ours. On Jan. 13th a nephew aged 8 years, who had t with his aunt for several nights and had then returned is own home about a quarter of a mile away during the k prior to the development of her herpes, developed cella. He had not been near the house after my visit Jan. 6th. On Jan. 22nd the child's small brother and r and a playmate simultaneously developed varicella showed much less constitutional disturbance.

The cases caused considerable interest and alarm amongst the cottars, who could hardly believe in the origin of chicken-pox. A few years ago my principal had a case of an elderly lady visiting a sick child on her estate. The illness was found to be chicken-pox, and about a fortnight later the lady developed a very severe attack of herpes zoster.

I am, Sir, yours faithfully,

FLORA L. MACDONALD, M.B., Ch.B.,
Assistant General Practitioner.

Isle of Mull, August 11th, 1928.

POST-OPERATIVE MASSIVE COLLAPSE OF THE LUNGS.

To the Editor of THE LANCET.

SIR,—We read with great interest Dr. K. D. Wilkinson's letter in your issue of August 4th (p. 257). In our communication the term collapse is used exclusively in the sense that Pasteur originally intended it—namely, to indicate a complete apneumatosis of the affected lung, deflation being applied to the varying degrees of shrinkage that can occur without complete airlessness. We suspect that Dr. Wilkinson does not intend a similar distinction and this may account, in part, for his attitude towards our theories.

It is recognised that the assumption of the supine position in any circumstances is accompanied by a definite decrease in the vital capacity, or deflation of the lungs. It is our contention that following abdominal operations this is increased by a limitation of the respiratory movements which is partly reflex and partly voluntary in origin. This additional influence is most marked following upper abdominal operations, and for purely mechanical reasons it affects the lower more than the upper lobes, and these in males more than females, but the resulting deflation can never be more extreme than that of forced expiration, and apart from active compression there is only one method by which the lung can become completely airless, that is absorption of the alveolar air following obstruction of the bronchial tree.

The onset of post-operative massive collapse following the obstruction of a bronchus may be insidious, the physical signs when the block is complete being those which have been described as "dead lung." The sign of consolidation appearing only when the obstruction is removed without aeration of the alveolar tissue, but when a lobe which is already deflated becomes collapsed because of the diffuse obstruction of the bronchioles, the initial signs may suggest consolidation, followed later by those of "dead lung," because of the accumulation of secretions, and later still by those of consolidation when these secretions are removed. We think that examination of this hypothesis will explain many of the difficulties which Dr. Wilkinson raises. It is not at variance with a known physiological fact and it does not necessitate the assumption of anything which cannot be confirmed experimentally. We submit, however, that although Dr. Wilkinson's very ingenious theory might account for extreme deflation of the lung it could not account for the absolute airlessness which we regard as an essential of massive collapse.

We have had no personal experience of massive collapse occurring after gun-shot wounds of the chest and elsewhere, but feel that they can be explained by bronchial obstruction, and in this connexion we think that insufficient attention has been given to Curl's observation, that even non-pentrating wounds of the thorax are followed by bronchial hypersecretion which is often almost confined to the opposite lung, due in his opinion to a contrecoup mechanism such as occurs in cranial injuries. Given this hypersecretion and voluntary suppression of the expulsive efforts it is easy to see how bronchial obstruction may arise.

We agree as to the necessity of administering an efficient pre-operative and in some cases a post-operative dose of atropine, and suggest that the favourable reports which Mr. Hamilton Whiteford

gives in his letter may be partly explained by the favourable climatic conditions under which he works and the exclusion of morphia from the routine.

We are, Sir, yours faithfully,

CHARLES R. BOLAND.
J. E. SHERET.

Ancoats Hospital, Manchester, August 8th, 1928.

THE VACCINATION COMMITTEE'S REPORT.

To the Editor of THE LANCET.

SIR,—The report, of which you gave the chief features in your issue of August 4th (p. 233), is a curious document in that its inside bears so little relation to the terms of reference on its outside. We seem to learn from it:—

1. That a certain amount of standardisation of vaccine has been done, but that the relation between any particular vaccinal dose and the immunity conferred by it is unknown.

2. It is recommended that a trial be made of vaccination by one insertion as is done in Canada, instead of by four marks as is at present the law here. Three such vaccinations per person are advocated, the first in infancy, then at school-age, and again between 14 and 16 years of age.

3. It is suggested that vaccination might be performed more aseptically in infant welfare centres than in some homes, and that public vaccinators should inspect their patients twice instead of once.

4. It is stated that vaccination may have some causal responsibility for the encephalitis which occurs ten days after vaccination.

5. Vaccination at epidemic and non-epidemic periods are not considered separately, save that it is assumed, no proof being given, that the revaccinated and those vaccinated in infancy do not contract post-vaccinal encephalitis, and that, therefore, all infants should be vaccinated in order that no person above that age should by primary vaccination run the risk of post-vaccinal encephalitis (a new reason for vaccination, to protect against vaccination).

6. It is stated that their recommendations involve no material change in the instructions to vaccinators under contract—that is, they do not desire any material change in the present methods.

7. It is an expensively printed report, singularly devoid of guidance to those responsible for small-pox and vaccination administration, and though it has taken two and a half years to produce, no attempt has been made to consider the problem from a practical standpoint or to envisage the present conditions.

8. From the reply of the Minister of Health to a Parliamentary question published on the recent bank holiday, it appears that post-vaccinal encephalitis is on the increase. It is therefore a mere question of time before the persons responsible for the vaccination of those children who die of post-vaccinal encephalitis will be considered by some as guilty of constructive murder.

9. Obviously the Committee appointed by the Ministry of Health and the Medical Research Council have regarded themselves as scientific tabulators of facts and have not considered it their function to criticise the department which appointed them. What is wanted now is what I suggested in your issue of Jan. 10th, 1925—namely, a real inquiry into small-pox and vaccination administration in all its bearings by a judge of the High Court; the gentlemen of the late committee should make excellent witnesses, for on the face of their documentary evidence, the sub-department of the Ministry of Health which deals with small-pox and vaccination requires a thorough investigation as to its methods. To cite one question, what is their justification for risking children's lives by vaccination as a protection against a disease which does not imperil their lives? They have, of course, a defence; it should be set out at an inquiry, and its value assessed.

10. The report of the Andrewes Committee of 19 which only saw the light via the League of Natio about a year ago and is now published in full, sho have given the authorities furiously to think. has not done so, and it is time now that some o trained to weigh evidence and come to conclusio thereon, should envisage the whole position. No o could better decide how this is to be done than t Lord Chancellor, in his present capacity of acti Prime Minister.

11. A year ago at Hastings I stated my views the subject printed in No. 4 (1927) of the *Journal the R.S.I.* The present report and recent happeni seem but to confirm them.

12. The root difficulty has always been that t orthodox regard vaccination as a panacea of univer application, whereas it should be regarded as insurance proposition, vaccination being only t conferment of a temporary immunity from small-p which may or may not be worth while under varyi conditions. And this difficulty is aggravated the antivaccinationists who claim that vacci tion confers no protection—a manifest absurdi Supporting their views by many easily refuta arguments they lead the orthodox to a reactive bli acceptance of certain very disputable conclusions.

I am, Sir, yours faithfully,

R. W. JAMESON

West Wickham, Kent, August 14th, 1928.

EPHEDRINE.

To the Editor of THE LANCET.

SIR,—I have recently been treating several patie with low blood pressure by ephedrine hydrochlor (Burroughs Wellcome and Co.) in doses of gr. ½. the majority of cases the patients have complained giddiness and feeling ill after this. These sympto appear half to one hour after taking the ephedri and seem to last about two hours. I have fou that gr. ⅓ or ¼ seems to produce a very satisfact rise in pressure and no toxic symptoms.

I am, Sir, yours faithfully,

H. W. HALES

Sheringham, Norfolk, August 14th, 1928.

"FUSSING OVER CANCER."

To the Editor of THE LANCET.

SIR,—At the last session of the Internatio Conference on Cancer, the president warned enthusia to beware of fussing over public health, or so, least, it seems from your summary of this meet (THE LANCET, July 28th, p. 182). Point was gi to his admonition by a statement made by Dr. Star Reimann, of Philadelphia, to the effect that he co find no indication of the educational campaign of last 15 years having had any effect. And yet, if there is one point in regard to cancer on wh practically everyone is agreed, it is that the ear cancer is detected, the better are the patie chances of recovery. It might be inferred from conclusion, so obviously true as really to be a trui that cancer campaigns throughout the world wo devote much of their energies and resources shortening the interval between the first signs the disease and the treatment thereof. Why, it m be asked, is there a certain hesitancy in pursuing matter to its logical conclusion, and in launch educational campaigns with regard to canc There are two phases of the period which ends w the commencement of treatment. The first pl lasts from the appearance of the first signs of ca to the first medical examination, usually made a general practitioner. The second phase dates f this examination till expert treatment is institu For the sake of brevity, I limit myself to a consid tion of the first phase.

What are the objections to a publicity camp conducted anonymously in the lay press by

aders of the medical profession? In other words, hat is there to prevent a highly respected and presentative body of experts from issuing to the blic carefully prepared information as to the rly signs of cancer? One of the objections most mmonly raised is that such an educational campaign ould degenerate into scaremongering, and the sult would be periodic outbreaks of cancerphobia d new crops of neurasthenics. But however refully we examine the situation which would arise der such conditions, we cannot find more than o classes of persons concerned—those who are, d those who are not, suffering from early cancer. he first would surely benefit from advice which ould lead them to an early medical examination. s for the remainder, they would, if alarmed, in ost cases consult a doctor, and in due course be assured. Another obstacle to an educational mpaign is a deep-seated distaste on the part of any doctors to popularising medicine. To some is a sacred cult, not to be prostituted by widespread blicity. The situation in the world of medicine -day is curiously similar to the world of theology the time when Wesley drew his followers from the m religious light of churches to the secular atmosphere the hillside. In defence of those who shun the pular health article or lecture as they would rnographic literature, we should remind ourselves at in the past a certain amount of popular health aching has been undertaken by cranks and persons th some axe to grind. But this class has flourished rgely because the field was left open to it by the ore respectable members of the medical profession. does not, however, follow that this field ought self to be neglected. The presence in it of undesir- les should rather be a spur to replacing them by mething much better. The leaders of the medical ofession who adopt a pose of masterly inactivity this matter may find it interpreted (or misinter- eted) as a glaring example of timid indolence.

Yet another objection to an educational campaign out cancer is the lack of unanimity among the perts as to even the most elementary matters ncerning cancer. They cannot tell the public ether it is infectious or not, hereditary or not. one all-important question after another they e bound to admit ignorance. It is tempting in ch circumstances to wait and see; peradventure e cause and uniformly successful treatment of ncer will be discovered shortly, and then it will be ne enough to tell the public. To such arguments favour of silence there is the unanswerable reply at, to repeat the opening words of this letter, actically everyone is agreed that the earlier cancer detected, the better are the chances of recovery. nd if every woman is taught that a swelling in the east or an irregular hæmorrhage during the erperium needs investigation at once by a doctor r fear of its being malignant, many who at present me to a doctor for the first time with an inoperable mour would be saved. There can be no two opinions this point. Reserve on the part of the medical ofession in this matter may seem lofty and dignified a few. To candid observers it must seem merely nteel.

I am, Sir, yours faithfully,

August 11th, 1928. D.P.H.

Medical News.

MEDICAL SOCIETY OF LONDON.—The programme for the first half of the session 1928–29 has now been issued. On Monday, Oct. 8th, Dr. J. W. Carr will give a presidential address on Medical Ambitions and Ideals; on Oct. 22nd Dr. C. E. Lakin and Mr. Tudor Edwards will open a discussion on the Diagnosis and Treatment of Empyema; and on Nov. 12th Prof. Hey Groves and Dr. James Neal will open a discussion on the Medico-Legal Aspects of Fractures. On Nov. 26th there will be a clinical evening, and the last meeting of the year will be on Dec. 10th, when Dr. Wilfred Harris, Mr. P. J. Verrall, and Dr. James Brailsford will introduce the subject of Sacroiliac Pain. The Lettsomian Lectures will be delivered on Feb. 18th and 27th and March 6th by Dr. H. W. Barber, on Dermatology in Relation to other Branches of Medicine, and the Society's annual oration will be given on May 13th by Prof. Grey Turner, whose subject will be Cancer of the Colon.

MARKING OF SURGICAL INSTRUMENTS AND APPLIANCES.—The Standing Committee (General Merchandise) appointed by the Board of Trade have reported on their inquiry as to whether imported surgical, medical, dental, and veterinary instruments and appliances, and dental supplies and furniture should be required to bear an indication of origin. The report, which recommends that an order in council be made requiring the marking of many imported articles at the time of sale or exposure for sale, is obtainable from H.M. Stationery Office, or through any bookseller, price 2*d.* a copy.

ROYAL SUSSEX COUNTY HOSPITAL.—Dame Anne Beadsmore Smith, Matron-in-Chief of the Territorial Nursing Service, recently opened the two new wings which have been added to the nurses' home of this hospital. These extensions will bring the accommodation of the home up to 108 beds, and comprises rooms for the sisters and a large lecture room. A brief service of dedication was performed by Bishop Russell Wakefield, and prizes were presented to the nurses by Miss K. Scott, who has for 27 years been matron of the hospital.

ABERDEEN ROYAL INFIRMARY.—The Prince of Wales will visit Aberdeen on Aug. 28th, to lay the foundation-stone of the new Royal Infirmary. This will form part of a scheme which will coördinate in one area the services of the Royal Infirmary, the Sick Children's Hospital, the Maternity Hospital, and the University Medical School. The building will cost £400,000, of which about £326,000 has been received.

STIRLING ROYAL INFIRMARY.—The new Royal Infirmary, which was opened by the Duke and Duchess of York on August 10th, has been erected on 15 acres of ground, being part of Wester Livilands estate, which is situated to the south-west of the town. The site is an ideal one from an infirmary point of view. It forms a great, open plateau, beautifully wooded, and commanding magnificent views of the surrounding country on all sides. The building is two storeys high, and contains four surgical wards of 16 beds each, two medical wards of 16 beds each, and one children's ward of 16 beds, with small side wards in addition. The administration department is placed in the centre of the building. There is also a maternity block, which contains two wards of eight beds each, with two single wards and one two-bed ward, accommodating in all 20 patients.

CENTENARY OF ANCOATS HOSPITAL. — On August 11th, 1828, a new "public dispensary" was opened for the districts of Ancoats and Ardwick, which were then suburbs of Manchester. At that time and until about 40 years afterwards patients were treated at their own homes, while out-patients went to the dispensary for advice and medicines. There were then no arrangements for in-patients. In 1872 it was determined to add to the dispensary work "hospital practice," and in 1874 a new hospital with six beds was opened. In 1888 a new wing was added, which brought up the number of beds to 100, with developments in all branches of medical and surgical treatment. Situated as the hospital is in one of the most industrial and thickly populated districts of the city, it is now quite inadequate to the calls made on its services. An X ray department was opened in 1907 and a massage and electricity department in 1913. The board of management have determined to make the centenary celebration the occasion for an appeal for a building fund of £100,000. Land adjoining the hospital has been acquired and plans are ready for an extension with 100 additional beds, a new casualty department, extension of some existing departments, two new operating theatres, and the necessary accommodation for nurses and staff.

DEATH OF MR. T. B. LAPWORTH.—The death curred on Thursday, August 9th, at the age of 59, of . Trever B. Lapworth, who was for 44 years associated th the *British Medical Journal*, and for 17 years the head nter. He had been in failing health for some time, and ll be sadly missed by numerous colleagues and friends.

AN IMPROVED SYRINGE FOR THE TREATMENT OF RICOSE VEINS.—We understand that the improved inge which we noticed in our issue of May 19th, p. 1022, now made in capacities of 3, 5, 10, and 20 c.cm., while total length has been greatly reduced by increasing the meter of the barrel and by using only one ampulla in capillary tube instead of two as previously. The inge can be obtained from Messrs. Adair, Dutt and Co., Victoria-street, London, S.W.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

Special two weeks Course in Infants' Diseases at the Infants Hospital, Vincent-square, Westminster.

SECOND WEEK.

MONDAY, August 20th.—2 to 3 P.M., Dr. W. E. Robinson: Chest Cases. 3 to 3.45 P.M., Miss Hughes (Matron of the Hospital): Lecture-Demonstration, Notes on Nursing Sick Infants. 4 to 5 P.M., Dr. Eric Pritchard: Lecture-Demonstration, Dried Milks and Patent Foods.

TUESDAY.—2 to 3.45 P.M., Dr. Eric Pritchard: Feeding Cases. 4 to 5 P.M., Mr. Philip Franklin: Lecture, Nasal Discharge and Sinusitis.

WEDNESDAY.—2 to 3 P.M., Miss Hughes: The Making-up of Feeds. 3 to 3.45 P.M., Dr. Eric Pritchard: Lecture-Demonstration, Infants' Stools. 4 to 5 P.M., Dr. C. C. Okell (at the Wellcome Physiological Research Laboratory, 25–28, Endsleigh-gardens, Gordon-square, W.C.): Diphtheria Prophylaxis.

THURSDAY.—2 to 3 P.M., Dr. Eric Pritchard: Feeding Cases. 3 to 3.45 P.M., Dr. Eric Pritchard: Lecture-Demonstration, Minor Ailments. 4 to 5 P.M., Mr. B. S. Simmonds: Lecture, Surgical Emergencies.

FRIDAY.—2 to 3.45 P.M., Dr. Eric Pritchard: Feeding Cases. 4 to 5 P.M., Dr. M. Maizels: Pathological Lecture, The Regulation of Hydrogen-ion Concentration.

SATURDAY.—2 P.M., Visit to Model Pasteurising Plant, Willesden, and to the Nursery Training School, Welgarth-road, Hampstead.

Appointments.

CROSSE, H., M.D., C.M. Edin., has been appointed a Medical Referee for the Districts of the Aylsham, Downham Market, East Dereham, Fakenham, Holt, King's Lynn, North Walsham, Norwich, Swaffham, Thetford, and Wymondham County Courts.

FACEY, R. VAUGHAN, M.B., Ch.B. Oxf., Medical Officer in charge V.D. Department, Royal Victoria and West Hants Hospital, Bournemouth.

MUSGRAVE, J. A., L.R.C.P.I., L.R.C.S.I., D.P.H., Medical Officer of Health for the County Louth.

Certifying Surgeons under the Factory and Workshop Acts: CONNOLLY, C. V., M.B., B.Ch. N.U.I. (Rothwell); and WALKER, F., M.B., Ch.B. Edin. (Falkland, Fife).

Vacancies.

For further information refer to the advertisement columns.

Aberystwyth, Aberystwyth Infirmary and Cardiganshire General Hospital.—H.S. £200.

Bath, Royal United Hospital.—H.P., H.S., and Asst. H.S. At rate of £120 and £100 respectively.

Bedford County Hospital.—H.S., also Asst. H.S. At rate of £175 and £130 respectively.

Birmingham, General Hospital.—Med. Reg. and Res. M.O. £155.

Blackburn and East Lancashire Royal Infirmary.—Res. H.P. Also Fourth H.S. £150 and £130 respectively.

Bradford, Municipal General Hospital (St. Luke's).—H.P.'s and H.S.'s. Each at rate of £200.

Bristol General Hospital.—H.P.'s, H.S.'s, &c. All at rate of £100.

Bristol Royal Infirmary.—H.P.'s, H.S.'s. Also Dental H.S. Each at rate of £80.

Cardiff, University College.—Lecturer and Demonstrator in Anatomy. £400.

Carmarthen, Joint Counties Mental Hospital.—Jun. Asst. M.O. £300.

Chiswick General Hospital, The Mall, Chiswick, W.—Hon. Surg. Also Asst. Hon. Anæsthetist.

Colchester, Severalls Mental Hospital.—Jun. Asst. M.O. £510.

Croydon County Borough.—Asst. M.O.H., &c. £600.

Dreadnought Hospital, Greenwich.—Surg. to Out-patients.

General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. At rate of £100.

Grove Park Hospital, Lee, S.E.—Sen. Asst. M.O. £650.

Hastings, Royal East Sussex Hospital.—Hon. Co-opted Dental Surgeon.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—H.P. At rate of £110.

Ilkeston, Borough of.—M.O.H. and School M.O. £800.

Kingston-on-Thames, Surrey County Sanatorium, Milford, near Godalming.—Sen. Asst. Res. M.O. £500.

Leicester, City Education Committee.—Asst. School M.O. £600.

Leicester Royal Infirmary.—Res. M.O.'s. Each at rate of £125.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Manchester, Hulme Dispensary, Dale-street.—Res. M.O. £300

Manchester, Park Hospital, Davyhulme.—Three R.M.O.'s. C at rate of £150 and two at rate of £120.

Market Drayton, Salop, Cheshire Joint Sanatorium.—As M.O. £250.

Newport, Mon., Cefn Mably Hospital, Michaelstone-y-vedw Asst. Res. M.O. £200. Also Third Asst. Res. M.O. South Wales Sanatorium, Talgarth, near Brecon. £200.

Norwich, Norfolk and Norwich Hospital.—Hon. Asst. Phys.

Nottingham City.—M.O.H. £1440.

Nottingham City Mental Hospital.—Jun. Asst. M.O. £350.

Plymouth, Homœopathic and General Hospital.—H.S. At rate £100.

Plymouth, South Devon and East Cornwall Hospital.—H.S. rate of £50.

Rotherham, Rotherham Hospital.—H.P. £180.

Samaritan Free Hospital for Women, Marylebone-road, N.W. H.S. At rate of £100.

Southampton Parish Infirmary, Shirley Warren.—Second As Res. M.O. £275.

Swansea General and Eye Hospital.—Sen. Res. O. £250.

Wandsworth Borough Council.—Locum Tenens, Asst. M.O.I &c. £10 10*s.* weekly.

West London Hospital, Hammersmith-road, W.—Non-Res. Cas. £5 5*s.* per week. Also H.P. and two H.S.'s. Each at r of £100.

Western Australia Lunacy Dept.—Jun. Asst. Res. M.O. £456.

The Chief Inspector of Factories announces vacancies Certifying Factory Surgeons at Eastbourne, Sussex; a at Wendron, Cornwall.

Births, Marriages, and Deaths

BIRTHS.

CARSON.—On August 2nd, the wife of Dr. Hugh Carson, t Hospital, Selly Oak, Birmingham, of a daughter.

GILES.—On August 9th, at York House, Stourport, Worc the wife of Dr. O. Pemberton Giles, of a son.

MATHEWSON.—On July 31st, the wife of Dr. W. R. Mathews Netherhill, Aberdour, of a daughter.

ROBB.—On August 12th, at Lodge Farm, Melton, Suffolk, t wife of Captain Campbell Robb, R.A.M.C. (retd.), of a s

RUSSELL.—On August 4th, at Tooting Bec-gardens, Streatha S.W., the wife of Dr. C. M. Russell, of a son.

TIVY.—On August 7th, the wife of Dr. Eric Tivy, of No Woolwich-road, Silvertown, of a daughter.

TODD.—On August 10th, at Cuckfield, Sussex, the wife H. C. Todd, F.R.C.S., of a daughter.

WHITEHEAD.—On August 4th, at York Mansions, S.W., wife of Major N. T. Whitehead, R.A.M.C., of a daugh (stillborn).

MARRIAGES.

ARNOTT—HOWDEN.—At St. Columba's Church, Crieff, Per shire, on August 8th, by the Rev. N. J. N. Gourlie, M. Maurice James, only son of Dr. and Mrs. James Arnott, Brampton, Cumberland, to Jean Skeffington, elder daugh of Emeritus Professor and Mrs. Robert Howden, of Broc field, Crieff (formerly of Newcastle-upon-Tyne).

CAPELL—DREW.—On August 11th, at St. Mary Abbots, Kensi ton, Dr. L. F. Capell, of Cricklewood-lane, N.W., to Doro Edith, only daughter of the late William Godson Drew, Hove, Sussex.

LORRAINE—WILSON.—On August 9th, at St. Mary's Par Church, Knebworth, J. C. Lorraine, M.D., F.R.C.S. Ed of Montpelier-square, S.W., to Alicia Hill, daughter of and Mrs. Wm. Wilson, of Knebworth.

SELLORS—LYELL.—On August 8th, at St. Jude's Chur Kensington, Thomas Holmes Sellors, B.M., B.Ch., M.A. Brenda Murray, daughter of Mrs. W. D. Lyell, Courtfie gardens, S.W.

THOMAS—NEWCOME.—On July 31st, at St. Gabriel's Chur Warwick-square, London, Ellis Rae Thomas, M.D., M.R.C. L.R.C.P., to Lilian Gladys, fourth daughter of the l Chester Pern Newcome, of Long Clawson, Leicestershire

DEATHS.

CAMBRIDGE.—On August 12th, at Crouch Hill, Thomas Arth Cambridge, M.R.C.S., L.S.A., aged 82.

CHILDS.—On August 6th, at Rock House, West Looe, Cornw Christopher Childs, M.D., aged 81.

DAVIDSON.—On August 11th, at Over Frays, Uxbridge, Jo Davidson, M.B., aged 70.

EASTES.—On August 8th, at Manor-road, Folkestone, Thor Eastes, M.D., aged 78.

GREY.—On August 10th, at Harrold, Bedfordshire, sudden from pneumonia, Egerton Charles Grey, M.A. Can D.Sc. Lond., M.R.C.S., L.R.C.P., F.I.C., late of Cairo.

KERSWILL.—On August 10th, at Sackville House, Sandwi Harry Kerswill, M.R.C.S., L.R.C.P., aged 60.

OAKDEN.—On August 12th, William Marshall Oakden, B. M.B., B.Chir. Camb., F.R.C.S. Eng., Medical Superintend of St. Luke's Hospital, Lowestoft, aged 41.

TUXFORD.—On August 8th, at Wide Bargate, Boston, Art Tuxford, J.P., M.D., aged 87.

WHERRY.—On August 12th, at Cambridge, George Edw Wherry, F.R.C.S., aged 76.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notice Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

NOTES ON THE SLACK ABDOMINAL WALL.

LIEUT.-COLONEL J. K. MCCONNEL, D.S.O., M.C.,
MEMBER OF THE CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.

THE following aims at placing the treatment of this con-
ion on to a scientific basis; it is hoped thus to avoid the
icism in Allbutt and Rolleston's "A System of Medi-
e": "The treatment ceases and, when a sufficient time
elapsed to undo the good which has been done, the
ient becomes as bad as ever." The writer asks forgive-
s for the extensive quotations in the following lines,
he feels it important to base his arguments on sound
hority.

When one investigates this subject, one is in danger of
oming bogged in the voluminous literature that discusses
sis of the abdominal contents—either severally or
ectively. A direct attack on the viscera themselves has
led to very gratifying results and, as is stated in "Modern
licine" (Osler and McCrae): "The treatment is in the
n rather unsatisfactory. . . ."

n order to concentrate our attention on the musculature
he weak abdominal wall, let us take as a simile a motor
e in which a bulge has appeared. Supposing one finds
replacement at the nearest garage, one may instruct the
chanic to insert a sleeve between the two tubes. In
se circumstances no one would blame the air inside for
ing caused the distressing symptoms, but one would
one's best to overcome the defect in the outer cover and
der it an adequate support for its contents.

n the same way several authorities have noted the
appearance of symptoms of visceroptosis, when a suitable
port has been applied. Prof. Starling stated: "These
cera in the normal condition are pressed against the
ler surface of the diaphragm by the elasticity of the
lominal wall." Sir Arthur Keith[1] states: "Now, as is
l known, when a living subject raises his body to the
ing or standing posture, the upper viscera do not drop
re than ½ or ¾ in.; the ligaments and mesenteries can
refore take no part in sustaining the viscera. The
porting structures are the muscles of the belly wall;
ticularly is the transversalis muscle important in this
pect; it is a living belt which girds the loins."

Let us now leave the viscera and turn our attention to
abdominal wall.

Muscle Action.

Before pursuing the argument it seems advantageous to
mmarise certain characteristics of muscles. Prof. Starling,
his "Principles of Human Physiology," wrote as regards
scular tone: "Every muscle in the body is in a condition
slightly continued contraction which keeps it tense,
that when it contracts in response to a stimulus, there is,
to speak, no "slack" to be taken up before the muscle
ins to pull on its attachments. . . . The tone of the
scles is a reflex phenomenon and is dependent on the
egrity of the reflex arc governing the muscles in question.
has been shown by Sherrington that the afferent part of
arc is represented by the afferent nerves from the muscle
lf. . . . To this system of afferent nerves Sherrington
given the name of the proprioceptive system, since it
xcited, not directly by changes in the environment, but
alteration in the animal itself."

A muscle may act in four ways. It may remain at rest,
y contract, may "hold," or may relax. Patients some-
es think that muscles can push; at least, they explain
vements in terms that would necessitate this. Con-
ction may take place actively, as when causing a move-
nt, or as a passive shortening, when the energy required
a movement is supplied by some outside force—e.g.,
vity—another person, a spring, &c. During an active
traction energy produced by a muscle is impressed on
system to which it belongs through the medium of its
achments or else hydrostatically. As an example of
latter we may take: "The contractions of the skeletal
scles squeeze the veins contained within them, and
ve the blood on towards the heart."[2]

Following the classification of muscles in a normal act[3] as
en by Dr. Kinnier Wilson, we find:—

. *Prime movers, or agonists*, which initiate the act.

. *The antagonists*, which would tend to interfere with the
ve movement, if they were not reciprocally inhibited.

. *Synergic muscles* (synergists), which neutralise undesired
ions, as when a prime mover, by passing over two or more joints, might give two or more actions, one being desired.

4. *Fixation muscles* (fixers), which provide firm origins from which the others may act.

In a firm closure of the fist the agonists are the flexors of the thumb and fingers, and antagonists are the extensors of the same; as synergists we find the extensors of the wrist, and as fixers the flexors and extensors of the elbow and many other muscles as well. Movements of coöperation also take place;[2] of these one may mention arm-swinging in walking.

The Abdominal Wall as a Muscle.

Turning now to the behaviour of the abdominal wall as muscle, we find its activities intimately related to other groups of muscles. We see a "great cylinder" (Keith), the sides of which are formed by the erector spinæ, quadratus lumborum, and the abdominal wall, while the top and bottom are imperfectly closed by the diaphragm and the pelvic floor. Sir Arthur Keith states: "We are apt to forget that the chief muscles of the belly wall, the two recti, the external obliques, and the internal obliques are primarily muscles of the spine; they are powerful postural antagonists of the component elements of the erector spinæ muscles. . . . The student is so apt to concentrate his attention on the respiratory action of the ribs that he forgets that they are the most powerful of the spinal levers. All the muscles attached to the ribs—the intercostals, the rectus abdominis, and oblique muscles of the belly wall—are prime movers and balancers of the spine."[1]

The abdominal wall, being antagonistic to the diaphragm, acts as a respiratory muscle; it contracts during expiration, forcing the latter up, the energy being transmitted hydrostatically. Prof. Starling wrote: "In fact, Sherrington's results on the coördination of muscular movements would tend to make us assume inhibition of the tone—e.g., of the abdominal muscles, during inspiration, and active augmentation of tone during expiration. Where the tone of the muscle is entirely lost—e.g., in the condition of visceroptosis—it has been observed that the diaphragm is thrown out of action, breathing being chiefly carried out by an elevation of the upper part of the thorax."

We must now refer to the action of the abdominal wall in a movement which may be termed "flattening out the lumbar curve," as it will be made use of during treatment. It can take place in any position, but one should realise that, unless the lumbar erector spinæ relax reciprocally, it cannot occur. During this movement the abdominal wall is normally the prime mover, but in certain positions, such as lying supine or reclining in a chair, gravity assists and, in fact, may supply the entire energy requisite for the movement, while the abdominal wall merely shortens passively. Under some conditions the movement is assisted by contraction of gluteus maximus and the hamstrings. When the action of these muscles becomes of importance, it will be seen that the movement approximates to a rotation of the pelvis, and that this rotation would, for instance, in the standing position, take place about an axis drawn through the hip-joints, whereas in other positions a variation from this axis would occur. For practical purposes this rotation, which is an important factor in treatment, may be described as "turning the tail between the legs," and it is interesting to notice the coöperation between the abdominal wall on the one hand and the gluteus maximus and hamstrings on the other. The rotation may be readily perceived by laying the hand on the sacrum, though not, however, on gluteus maximus, if this latter is strongly developed.

One further point before passing on: Should a patient maintain a contraction of the erector spinæ, make a contraction of the abdominal wall and, at the same time, hold his breath, one then observes that his chest is forced up. This combination of muscle actions frequently occurs when a patient tries to flex or to flatten the lumbar spine.

Tone.

As regards the tone of the abdominal wall, Sir Arthur Keith[1] states: "The moment we assume a sitting or a standing posture there is set going a reflex mechanism which throws the muscles of the belly wall into a state of postural tone." This, of course, refers to the normal individual who has a satisfactory abdominal wall. From earlier quotations we see that this tone depends primarily on proprioceptive impulses from the constituent muscles themselves, and should note that the alternate inhibitions and augmentations of tone reciprocally in relation to the diaphragm tend to keep the abdominal wall in a healthy state.

In one type of individual we find a slack abdominal wall associated with a marked lordosis or increase of the lumbar curve. As regards the obese variety of this type, there is, in Dr. W. F. Christie's "Surplus Fat and How to Reduce it," a clever sketch entitled, "Election Day at the Fat Man's Club." The next gentleman to enter in is depicted

sideways on, displaying a magnificent "object in view," as a large tummy is sometimes called, and one notices a strongly developed lordosis. It has been found that a proportion of this type, both the obese and the thin varieties, suffer pain in the lumbar region, and often it is for this reason that they submit themselves for treatment. This pain may arise in the joints—vertebral or sacro-iliac—or else in the muscles and surrounding structures; if in the latter, it is due to the presence of waste products, to strain or to spasm required for the fixation of painful joints, and in any case a lack of coördination of the constituents of the muscle group is likely to be a factor of some importance.

Anyone who wishes to appreciate the condition of this type of patient should clasp with both arms a heavy weight, holding it about the level of the umbilicus, and walk upstairs. Balance is preserved by canting the upper part of the body backwards, maintaining this attitude by a contraction of the lumbar muscles. After mounting several flights of stairs in this way a pain in the back may become quite noticeable. When a group of muscles finds itself antagonistic to another strong group held in contraction, its tone tends to be inhibited. Such an inhibition of tone tends to be forced on the abdominal wall whenever the lumbar muscles are held in spasm. It will thus be realised that normal activity of the abdominal wall in relation to the diaphragm tends to improve the tone of the abdominal wall, whereas spasticity of the lumbar muscles tends to depress it.

Another type of individual has a thin and sagging abdominal wall, but without any undue lumbar curvature or, in fact, with a deficiency thereof. As a rule, the cervical curve is exaggerated (ewe-neck) in order to assist in giving a horizontal line of vision, the tilt of the eyes, the relation of occiput to atlas, and the dorsal curve being variables in this respect. As will be shown later, the proprioceptive messages from the prevertebral cervical muscles are an important factor in the tone of the abdominal wall. In this type of patient the abnormal balance between the post and prevertebral cervical muscles is the key to the situation.

We must refer briefly to alterations of tone of the abdominal wall due to impulses which arise in the afferent nerve-endings of the viscera. On the one hand, rigidity of the former is a well-recognised symptom of acute conditions in the latter, while on the other hand Sir C. Sherrington demonstrated that when the afferent nerves from the viscera are severed, the abdominal musculature loses its postural tone.

Posture.

"In the maintenance and recovery of posture many separate types of reflex converge to produce a common result, and these reflexes arise from such sense organs as the labryinth, the eyes, and the muscles themselves. The removal of the central hemispheres has but little effect on normal posture or on righting reactions by which that posture is resumed after having been interfered with. It is clear, therefore, that these reactions are true reflexes, and it would be quite wrong to imagine that the animal knows that its posture is being upset, resents interference, and voluntarily acts in such a manner as to counteract the offence." [4]

"Consciously, we are in complete ignorance of the specific muscular units effecting a 'voluntary' movement. . . . The point at present is that a very large part of every 'voluntary' movement is both 'involuntary' and outside consciousness." [3]

Prof. Magnus's researches have classified these reflexes in terms of the organs from which the stimuli arise, also as to whether they refer to movement (stato-kinetic) or rest (static), both as regards "pose" or "righting." "In general we can say that by means of the stato-kinetic reflexes the body is brought into its normal pose, which pose is maintained by the operation of the various static reflexes. It will have been noticed that the head plays an important part in deciding most of these responses. The head contains the organs of special sense, particularly the distance receptors for sight and sound, so that the head tends to be voluntarily directed towards stimuli which affect these sense organs. The proper orientation of the remainder of the body which ensues is effected by the action of the various reflexes which have been described." [4] Dealing with the same subject, Prof. Starling wrote: "In the evolution of the nervous system there has been a continual subordination of the hinder parts to the head end, in consequence of the development at this end of the all-important distance receptors, the impulses from which take a predominating part in determining the reactions of the body as a whole."

Dr. Kinnier Wilson's example of muscle action, when firmly closing the fist, may be amplified. If it took place in a standing or sitting position, the muscle action of the trunk, coördinated to maintain posture, would be synergic and also would fail to obtrude into the field of consciousness. The man would not notice the pose of his body, which would be taken up in accordance with his normal habit.

Sir Arthur Keith [1] points out that the spine of the human baby changes from the primitive curve in the second year of life, and adopts the lumbar curve. This alteration takes place through the medium of the spinal muscles—the spine's balancers. We must not consider this lumbar curve as fixed, but rather as varying continuously to suit the requirements of the moment. The same applies, and even more so, to the relative tension of the balancing muscles. One might argue that, while this curve is being established, consciousness takes it into account, but certainly later it passes unnoticed, unless commented on by a parent. The child is consciously concerned with his hand movements, &c., and only gross mis-balances of the lumbar and abdominal muscles are recognised. We thus see that it is possible for an undue contraction of the lumbar muscles to arise in early youth and develop, so to speak, along with the child; this contraction would merely be a failure to adapt the body to its environment. The so-called "pot-bellied" type of child constitutes a more serious condition than the above; the disturbance in this case is probably visceral in origin.

As a rule, it is probable that a lumbar spasm, as we now can term it, arises as a secondary condition to a mal-posture of the shoulders and dorsal region. The child gets tired either when standing or sitting; the shoulders droop and the dorsal region becomes round. The parent or teacher thinking of the contracted chest, says "sit up," directing the child's attention to its head and also, perhaps, to its shoulders. As the levator anguli scapulæ rhomboid serratus magnus sheet of muscle, as well as the dorsal muscles, are tired, the child compensates in the easiest possible manner, namely, by contracting the lumbar muscles and, by inducing a lumbar curve, makes the dorsal curve less apparent and the cervical lordosis (ewe-neck) less pronounced—". . . sitting bolt-upright is particularly exhausting, especially for young people . . ." (Keith.)

When dealing with patients who have a slack abdominal wall, it is usually noticeable that, in the erect position, attempts to flatten the shoulders or decrease a dorsal curve are not limited to the correct muscles, but irradiate downwards to the lumbar area, or sometimes upwards to the cervical region. Before treatment they are virtually unable to contract alone the dorsal muscles; this is so even after the movements concerned have been performed passively to ensure they realise what is required.

Brief reference must be made to conditions that may arise subsequent to pregnancy; treatment is discussed in "A Textbook of the Practice of Medicine" (F. W. Price). It appears that the lumbar spasm—accompanied by pain in the back—which is so often a feature of the last few months of pregnancy, occurs in the effort of preserving balance when walking or standing. In some cases the postural habit persists after childbirth, although the stimulus which gave rise to it is no longer present; such conditions as tender sacro-iliac joints, if inadequately supported, would encourage this persistence. It is suggested that the lumbar spasm militates against and tends to delay the recovery of the stretched abdominal wall, the proprioceptive impulses from the former tending to reduce the tone of the latter.

Proprioceptive impulses from the neck muscles have already been mentioned as a stimulus which increases the tone in the abdominal wall. Prof. Magnus's cinematograph films of falling cats, which showed the head righting first and then the body, indicate a chain reflex compounded from a labyrinthine reflex as regards the head and a neck reflex as regards the body. When teaching a horse to correct "reining back"—the forefeet moving first, so as to arch the spine and necessitating a full contraction of the abdominal wall—one notices the extreme importance of a correct muscle balance in the neck. When teaching patients a good neck posture they frequently, on their own initiative, draw attention to the increased tone in the abdominal wall, which accompanies their newly-acquired neck movement. This can be demonstrated both when lying and when erect; it is certainly not merely a transient stretch reflex. Unfortunately, little research seems to have been done on this point, but it appears certain that the neck reflex which accompanies a good neck carriage is an important factor in human posture.

Sir Arthur Keith draws attention to the difference between a power of voluntary contraction and a condition of postural tone. An abdominal wall may be excellent when voluntarily contracted, and yet a few minutes later, when the patient's attention has been directed to something else, it may revert to "C3" as regards postural tone. We can state the conclusion that a posturally slack abdominal wall is associated with either an undue lumbar spasm or a deficient tone in the prevertebral neck muscles, or with both. Healthy exercise in relation to the diaphragm helps to maintain the abdominal wall in good condition and delay its degeneration. Teaching relaxation of the antagonist is the first principle of re-education as laid down by Dr. J. B. Mennell; [5] it

doubtedly the first step in a rational treatment of a slack dominal wall.

Reflexes.

We find ourselves faced with a problem of postural exes and, in order to follow the subject to its logical nclusion, we must invoke the aid of Prof. Pavlov's earches, from which we can obtain valuable assistance. s not easy to recognise at first sight exactly with what we dealing; for instance, the supposed inborn reflex which vlov extensively employed—namely, the "salivation animals on sight and smell of meat—is not an inborn unconditional reflex, but an acquired one."[4] it is bable that it is predisposition to such a reflex which is nsmitted by heredity. Are we dealing with an inborn lex in the case of the lumbar muscle tensions or in the e of belly wall (see previous quotation from Keith)? so, to what extent are they inherited, and how much nditioned by the experience of the individual?

n point of fact Pavlov himself inhibited an inborn reflex means of another one, as he records in his work "Conioned Reflexes." As Prof. Starling stated: "It is ever possible to extinguish artificially a (conditioned) ex in the course of a few minutes. Such an experimental inction of conditioned reflexes can be obtained by anging the conditions of the experiment, so as to break first law of conditioned reflexes, namely to use the nditioned stimulus several times in succession without nbining it with the unconditioned stimulus." Thus the leterious effects of either type of reflex can be got over en desirable, but we must beware of inhibiting inhibitions ich we are trying to establish.

Let us take it that, at the present stage of the development of our race, the muscular contractions inducing those mpensatory spinal curves which are designed to keep the ad level, &c., in the most satisfactory manner, are an herited reflex. Groups of stimuli from the labyrinth, k, &c., that arise on the assumption of the erect position, in relation to the above. In the normal human being erect position evokes an increased tone in the belly ll (Keith). We must remember that from the assumption the erect position there does not result just a single mulus but a group of stimuli, some or other of which y predominate in each individual. Pavlov found that h factors as old age, pregnancy, distension of the bowels, health including digestive troubles, drugs such as caffeins, mides, alcohol, &c., altered the relative intensity of itation and inhibition. Under these conditions it is iple to imagine how the normal reflex in relation to the ct-position group of stimuli becomes inhibited and at t some, then more, of these stimuli come to "condition" increased tone of the lumbar muscles and to have a iprocal effect on the abdominal wall, as already described.

Treatment.

The outline of treatment consists of dissociating the stural stimuli from the patient's undesirable postural tor reactions, and then linking them up with those that more satisfactory. The patient practises on the one nd, the required muscle actions—individually or in ups—in positions in which the postural stimuli of the ct position either do not operate or are naturally inhibited. the other hand, the same postural stimuli are allowed act under temporal or spatial conditions, in which they not call forth his undesirable reactions. Thirdly, the tient is shown how to encourage the linkage of stimuli with satisfactory posture. Besides this he must appreciate m the outset how to avoid undoing the results of his rts during the intervening periods, until the new postures ome automatic when conscious effort is no longer quired.

The use of stretching exercises to deal with spasticity the lumbar region would not appear to produce the best ults. As a rule, forcible stretching is not required and it were, the patient's condition would probably lead to eing contra-indicated. It is far wiser to teach a relaxation d trust that such stretching as is necessary will come with proved function.

Following the lead of Pavlov's work, we see the importance the "erect position" being really a group of conditioned muli instead of being a single one. A man who has just rnt to relax his lumbar muscles when sitting in a certain air may not be able to repeat this under slightly different nditions—e.g., in a chair with a lower seat or back at a ferent slope. He certainly cannot repeat the relaxation once when standing; this is important, because patients inclined to try and estimate progress when standing at the termination of a treatment. Pavlov shows that th dogs, stimuli from other parts of the brain effect nditioned reflexes both as regards synthesis and inhibition with human beings this must occur to a still greater ent—thus the memory of failure or success in a movement exercise may make a vast difference to results. In this stural work one finds that what suits one patient is virtually useless with another, although the conditions appear to be almost identical.

From the foregoing one can guess that exercises in the erect position should be given with caution at first. In "sitting" one can use from the outset certain relaxation postures and exercises, but in "standing" anything of the kind is contra-indicated, as it would tend to inhibit the inhibition we are developing. Certain uncommon positions are of extreme value, as for instance, "hands and knees"; provided the heart, &c., permit, there appears no objection to the assumption of this position, as patients over 70 years old, and others over 20 stone, have taken to it eagerly. These uncommon positions have an advantage of being a virgin field as regards stimuli; in them the stimuli have never been wrongly connected and so do not require to be inhibited. Lying positions are of the greatest importance, as is so strongly advocated by Dr. Joel E. Goldthwait.

One must say, however, that it is essential to connect what is learnt in the above positions with what one wishes to take place in "standing" or "sitting." This can be done either by a steady transition from one position to another, or by the patient grasping a similarity of joint movements, muscle actions, &c., noting the varied effect of gravity on the different parts of his body. Another useful method is to arrange that the contractions of the postural muscles are synergic to other muscles, whose activity is for the moment vividly within the field of consciousness. Synergism is thus used as a stepping-stone between voluntary effort and normal postural activity. Incidentally, in this way, a patient is led on from the idea of a correct posture, when his body is at rest, to one when he is in motion.

As Prof. Starling wrote: "The shorter the intervals between the successive presentations of the conditioned stimulus the quicker the extinction." This, of course, applies equally to the re-synthesis. "A conditioned reflex which has undergone such extinction, however, regenerates spontaneously after a few hours. . . . Repeated extinction has much more profound effect, and the spontaneous regeneration of such reflexes is progressively slower and less complete so that after having undergone several extinctions, the reflex disappears altogether."[4] Tri-weekly, or even daily, treatment in gymnasiums where patients undertake complicated exercises, difficult to repeat except under the eye or with the help of a gymnast, do not appear likely to give the optimum results. To obtain these, it seems best to visit the patient and work in his own study and/or bedroom, so as to show him exactly how to use his own chair, sofa, &c., to the best advantage. "Little and often," as Dr. J. B. Mennell points out, should be the rule; practice at decreasing intervals soon makes a posture automatic and re-establishes a good habit. One must show the patient movements and relaxation postures applicable to various occasions, those for before rising and after retiring, those for use when turning over a leaf of his paper, when strap-hanging in the tube, sitting in the car or bus, when "dummy" at bridge—no one would notice that a curative process was in progress, so there would be no cause for comment or laughter.

Reference has been made to relaxation postures. These are most important. As examples, one may cite: sit with one's feet on a footstool so as to avoid an undue lumbar curve; have a pillow under the knees if taking breakfast in bed; lie on one's side with the knees drawn up, especially if this is associated with "turning the tail between the legs." This tilting of the pelvis is of course one of the most valuable movements. Many patients are unable at first to contract gluteus maximus or the hamstrings to assist in the movement. In this case contraction of the specific muscle is best learnt alone—for example, when reclining against pillows in bed, straighten out the hip-joint and slide down in bed. No one, unless paralysed, &c., could fail to do this simple movement, and the required contraction, after having been felt, can be performed in other positions and in combination with that of other muscle groups.

Looking glasses are useful during treatment, as ocular demonstration has a great power of suggestion. The usual three-quarter length wall-glass and a hand, or other portable, mirror will suffice; they are especially valuable when teaching neck postures. Shadowgraphs and a blackboard have been advocated for postural instruction.[6]

The number of treatments required depends largely on the voluntary control the patient has over his various muscles. An incoördinate patient who has never been accustomed to games of skill will take longer, especially if he has extreme weakness of the abdominal wall and spasticity in the lumbar region, than one who has to some degree trained for sport or athletics. Additional disturbances, such as round shoulders, a contracted chest, especially in elderly people, increase the difficulty of obtaining a satisfactory result and, consequently, the length of treatment. Sometimes it is found that even a couple of treatments suffice to put a man on the right road so that he can

continue to develop good habits by himself. It is taken for granted that during a treatment of the nature described in these notes, the medical practitioner in charge of the case will prescribe such medicinal or other treatment as he deems advisable. One must add, in conclusion, that the feeling of well-being that comes from an improvement in portal circulation and greater activity of the abdominal wall is sufficient incentive for a patient to continue the slight amount of effort that is needed.

I am permitted by Sir Arthur Keith to say that, in his opinion, facts are brought to light in this communication which would be useful in practical therapeutics, and which, while well known to workers along the special line, are not necessarily equally well known to practitioners. This has encouraged me to publish the notes.

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NAVAL TRAINING ASHORE.

THE good training ship, H.M.S. *St. Vincent* (Portsmouth), seems like Antæus to have gained fresh vitality since it touched mother earth and took over the old Marine Barracks at Gosport. Surgeon-Commander H. W. Nicholls tells in the *Journal of the Royal Naval Medical Service* for July of the comfort and care which surround these bluejacket boys, of whom there are at present about 600. During a nine months' stay a boy adds on the average 8 or 9 lb. to his weight and 2 to 3 inches to his height. The boys are housed in four blocks, with a separate building for new entries. Heating is by radiators throughout; in winter dormitories are warmed up from 2 A.M. until the boys have finished dressing and fires are lighted early in the school rooms for the work which is done there before breakfast, Commander Nicholls believing these early hours to be the danger period. Special attention is given to providing green vegetables which he finds discourage boils. The routine baths are hot and cold showers, and are fully used, voluntarily, too, after games. Physical training, in which games play a large part, produces remarkable results; the boys take quickly to hockey and Rugby football, but some prefer reading, and there is no compulsion. There is a covered swimming bath. Among new entries there were seven cases of mumps, four of scarlet fever, in nine months; apparently none among "old boys." There are 26 beds in the sick bay; work in the ship is strenuous, and the common form of "going sick" is a tiredness which is slept off in 24 hours, duty being resumed in 48. Recruits are coming in more from Gosport now, where parents see how well off the boys are. The medical officer notes with admiration their ability to eat a two-course dinner in seven minutes, without ever a complaint of indigestion. It is pleasant to know that another wooden training ship, with its risk of infection from confined space, has been disestablished. Ut exeant omnes!

IS THERE A NEUROTROPIC SPIROCHÆTE?

MANY of the reports on acquired syphilis in family groups emphasise the frequency of neurological complications, and invoke the influence of a so-called neurotropic strain of *Spirochæta pallida*. H. Noguchi and other workers distinguished this strain from the "dermatropic" by its size and variations in its incubation characteristics in experimental animals, as well as by its results. There is a school of thought which holds that infection from a common source tends to produce the same type of syphilis in all who catch it. A number of investigators, however, believe that the soil is more important than the parasite in determining the form of the manifestation. The former produce evidence of the disease, taking the same form in husband and wife; J. E. Moore and A. Keidel studied 111 married couples and found that in 57 per cent. of the cases with parenchymatous neurosyphilis the partner also had neurosyphilis in some form. A similar experiment at the Mayo Clinic, however, only yielded 22 per cent. of positive results.

In order to see what evidence could be produced on the other side, that of the predominance of family characteristics, Dr. P. A. O'Leary and Dr. M. W. Rubenstein have investigated [1] 13 families whose members had acquired syph from different sources. They eliminated patients with a signs of congenital syphilis or parental history before birth of children, and exacted clinical and serological evide of syphilis, and a history of chancre followed by second signs. There were four groups of sisters, two of broth two of brother and sister, two of mother and son, two mother and daughter, one of father and son, and one mother, son, and daughter. In seven families more t one member, in two neither member, and in four fami one member only had neurosyphilis.

Although these observers agree that trauma, dise virulence of the organism, and the type of treatment important factors, they see in their results evidence for greater importance of the family characteristics. T results of treatment gave a more striking indication the working of this factor, for in five out of the se families with neurosyphilis all the members respon favourably, while in the other two none responded. T conclusion seems to be a sensible one, but the smallness the number investigated throws doubt on the eviden value of the experiment.

NEW PREPARATIONS.

Eukodal.—This analgesic preparation, supplied H. R. Napp, Ltd., 3 and 4, Clements Inn, Kingsw London, is introduced as an ideal substitute for morphi Codein is not held to be dangerous as an addiction dr and has been excluded from the Dangerous Drug A The formula is given as dihydroxy-codeinon hydrochlori and it is claimed both to be an excellent substitute morphine and of great value when used in conjunction w morphine. The narcotic and analgesic effects are produ when the drug is administered orally, where its employm is specially recommended for allaying irritative cou while to meet cases of pain subcutaneous injections may employed.

The same firm sends us a new theobromine preparati *Theosol*, whose full formula is theobromine calcium s cylate, a formula which explains the intentions which h led to the preparation of the drug. The indications for use are probably familiar to many of our readers; t combination has been recognised of value in arterio-scler and asthma of the cardiac form, and is also found to poss diuretic qualities.

LONGEVITY.

THE *Times*, on August 13th, devoted a leading art to Mr. Li Ching Yun, who is alleged just to have celebra his 250th birthday, the representative of the *North Ch Herald* having visited him and found him quite well. name is at any rate worth putting on record, Thomas Parr with his 153 years is put completely in shade. Some people are doubtful of Parr's credent but in December, 1926, the death was reported at C stantinople of Zaro Agha at the age of 153, and ment was made then of Teku Oglu Ali Agha, aged 147. November of that year, also, the death was reported, at age of 135, of Maria Ustav, in Carcaliu, Tulcea, Dobr Roumania, who lived on vegetables and fish and wa strict teetotaller, but no doubt consumed the soured r of the country to which the number of centenarians Bulgaria and Roumania is largely attributed. It is sumed, of course, that the Chinaman has not been celebra his birthday every six months.

INADVERTENCE.

IN reply to natural expostulation we admit that advertisement wherein an impossible virtue was claimed a particular ointment was inserted without due attentio its contents. We much regret the inadvertence.

[1] Minnesota Med., June, 1928, p. 406.

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ENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION OF THE UNITED KINGDOM.

POWERS, DUTIES, AND CONSTITUTION.

THE General Council of Medical Education and egistration of the United Kingdom is, first, a gistering body: no person, even though his qualifica-ns have been obtained by examination, is a *legally alified* medical practitioner until his name appears the Medical Register. Secondly, it is a standard-ng body, ensuring that medical education reaches an icient minimum standard by scientific examination. irdly, it is a penal and disciplinary body, having wer to remove from the Register any practitioner nvicted of felony or misdemeanour or adjudged guilty professional misconduct. Fourthly, to the Council committed the codification of pharmaceutical medies. The duties of the Council are thus primarily a public nature, and its construction shows its ness for its fourfold responsibilities.

The Council consists of 38 members, of whom all t 11 are official representatives of some corporate dy. Five members are chosen by the Crown on the lvice of the Privy Council, and six others are elected the members of the medical profession as Direct epresentatives. The Crown members need not be edical men and one layman now sits on the Council. ree members are appointed for dental business by e Privy Council under the Dentists Act, 1921, der which the powers and duties of the General edical Council with regard to the keeping of the entists Register and the administration of the entists Acts were largely transferred to the Dental oard of the United Kingdom.

THE EDUCATIONAL CURRICULUM.

Professional Education.—The course of professional udy after registration as a student occupies at least ve years. The Final Examination in Medicine, rgery, and Midwifery must not be passed before the ose of the fifth academic year of medical study.

Regulations as to Registration of Medical Students.

Before registration as a student every candidate ould produce evidence that (*a*) he has attained the ge of 17 years; (*b*) that he has passed a recognised amination in general education; and (*c*) that, *addition thereto*, he has passed, or obtained emption from, an examination, theoretical and actical, in elementary physics and elementary emistry conducted or recognised by a licensing dy. The minimum standard of General Education quired is that of University Matriculation or ntrance examination in the Faculties of Arts or ure Science. In other Faculties the examination ust be of the standard prescribed in Regulation 2 elow.

An approved course of instruction in elementary iology at a secondary school or other teaching stitution recognised by a licensing body may lmit a student to the professional examination in ementary biology upon registration as a medical udent.

The candidate commencing medical study should pply to the registrar of the division of Great Britain nd Ireland in which he is residing, according to a rescribed form, copies of which may be had on pplication to the several licensing bodies, medical chools, and hospitals, or at the offices of the Council; nd should produce proof that he, or she, has fulfilled he first three conditions.

The Maintenance of the Register of Medical Students.

1. The Education Committee prepares and issues from time to time a list of examining bodies whose examinations in general education fulfil the conditions of, and are specially recognised by, the Council.

2. The Council has recognised the undernoted university examinations which are conducted in Great Britain and admit to the Faculties of Arts or Pure Science, or to other Faculties, subject to the conditions specified below:—

Oxford University, Responsions; Cambridge University, The Previous Examination. The Matriculation Examinations of the following Universities: Birmingham, Bristol, Durham, Leeds, Liverpool, London, Victoria of Manchester, Sheffield and Wales, and the Entrance or Preliminary Examination of the Universities of Scotland.

The condition prescribed by the Council in Faculties other than Arts or Pure Science is that:—

The certificate shall bear evidence that the candidate has passed in the Matriculation or Entrance standard, in the following subjects, viz.: (*a*) English. (*b*) Mathematics, Elementary. (*c*) A language other than English. (*d*) A fourth subject, as defined in the regulations of the particular Examination, to be chosen from the subjoined list, viz.: History, Geography, Physical Science, Natural Science; Latin, Greek, Hebrew, French, German, or other language accepted by the University for the purpose of matriculation or entrance.

3. Subject to the condition prescribed above (Section 2), the Council will recognise those of the examinations conducted by recognised authorities in Great Britain which are accepted by any one or more of the above-named Universities as equivalent (under prescribed conditions as to "credits" or "grades"), for purposes of Entrance or Matriculation, to an Examination named in the preceding list (Section 2). Such Examinations are:—

Bristol University: Higher School Certificate Examination; School Certificate Examination. Cambridge Local Examinations Syndicate: Higher School Certificate Examination; School Certificate Examination. Central Welsh Examination Board: Higher Certificate Examination; School Certificate Examination. Durham University: Higher Certificate Examination; School Certificate Examination. London University: Higher School Certificate Examination; General School Examination. Northern Universities Joint Matriculation Board: Higher Certificate Examination; School Certificate Examination. Oxford and Cambridge Schools Examination Board: Higher Certificate Examination; School Certificate Examination. Oxford Delegacy for Local Examinations; Higher School Certificate Examination; School Certificate Examination. Scottish Education Department: Leaving Certificate Examination.

4. The Council will continue to recognise certain Examinations conducted by Educational Bodies, other than those (mentioned in Section 3) whose Examinations are accepted by any one or more of the Universities of Great Britain. Recognition will not be extended under this Section to any Examination unless the Council is satisfied (*a*) that in scope and standard it is equivalent to a recognised Matriculation or Entrance Examination of a University of Great Britain, (*b*) that it fulfils the condition prescribed by the Council (Section 2), and (*c*) that the Examination has been completed at not more than two sittings. Such Examinations are:—

The College of Preceptors (England): Senior Certificate. The Educational Institute of Scotland: Preliminary Medical Certificate.

5. Subject to the prescribed condition (Section 2), the Council will recognise the Entrance Examination to the School of Physic of the University of Dublin, and the Matriculation or Entrance Examinations of the National University of Ireland, the Queen's University of Belfast, the Irish Royal Colleges of Physicians and Surgeons; and also the Leaving Certificate of the Department of Education of the Irish Free State, the Senior Grade Leaving

Certificate of the Ministry of Education of Northern Ireland, and all examinations accepted by any one or more of the Universities of Great Britain or Ireland. as equivalent, for purposes of entrance or matriculation, to the above-named University Examinations.

6. Subject to the prescribed condition (Section 2), the Council will recognise all Examinations of Colonial or Foreign Universities which are accepted by any one or more of the Universities of Great Britain as equivalent, for purposes of entrance or matriculation, to an examination named in the list of examinations recognised by the Council (Section 2).

7. The Council will recognise the Final Examinations for Degrees in Arts or Science of any University of Great Britain or Ireland or of the British Dominions.

8. The registration of medical students shall be placed under the charge of the Branch Registrars.

9. Each of the Branch Registrars shall keep a register of medical students.

10. The Branch Registrar shall enter the student's name and particulars in the Students Register, and give him a certificate of such registration.

11. Each of the Branch Registrars shall supply to the several licensing bodies, medical schools, and hospitals, in that part of Great Britain or Ireland of which he is Registrar, blank forms of application for the registration of medical students.

12. A copy of the Medical Students Register prepared by each of the Branch Registrars shall be transmitted, on or before Dec. 31st in each year, to the Registrar of the General Council, who will distribute the list to the licensing bodies, medical schools, and hospitals.

All applications for special exceptions to the foregoing regulations as to registration shall be addressed to the Registrar of the General Council, and shall be decided by authority of the Education Committee, who shall report thereon to the Council.

The Medical Schools and Colleges.

The Universities, including their Colleges and Medical Schools, and Schools of Medicine at which Medical Study may be commenced in the United Kingdom are set out seriatim in the following pages.

Medical Registration in Ireland.

Within the past few months the problem of medical registration in the Irish Free State, which had given rise to some anxiety during the past two years, has been satisfactorily settled. By agreement between the Governments of Great Britain, of the Irish Free State, and of Northern Ireland—since confirmed by legislature at Westminster and Dublin—the powers and duties of the General Council of Medical Registration and Education are to continue as heretofore in respect of qualifying bodies in the Irish Free State, and of medical practitioners qualified in the Irish Free State. Side by side with this a Medical Council has been set up in the Irish Free State with the duty of establishing and controlling a Register for the Irish Free State. Practitioners whose names are on the General Register, and persons who pass a qualifying examination in the Irish Free State, will be registered on the Irish Free State Register on payment of the prescribed fee. The Irish Free State Medical Council have, over those whose names are on the Irish Free State Register, the same disciplinary powers as are possessed by the General Council over those whose names are on the General Register. To possess the privileges of a qualified practitioner in the Irish Free State it is necessary to be registered in the Irish Free State Register.

The net result of the change in the law as regards the practitioner qualifying in the Irish Free State in the future is that: (1) If he intends to practise only in the Irish Free State he need only register in the Irish Free State Register; (2) if he intends to practise in Great Britain he will register in the General Register: and (3) if he is in doubt where he will practise he will register in both Registers. He will, as he registers in one Register, or in both Registers, put himself under the disciplinary control of the one Council or of both Councils. No practical inconvenience is caused, and practitioners qualified the Irish Free State in future will not find themselv deprived of any of the privileges or rights enjoyed their predecessors.

The Dental Board of the United Kingdom.

Anyone who is on the Medical Register is entitled practise as a dentist, although he cannot register such without degree or licence in dentistry; but is a distinct advantage to take a special dent qualification, otherwise few dental appointments general or special hospitals or dispensaries are availabl and, unless registered in the Dentists Register, dental work, under the additional Benefit Scheme the National Health Insurance Act can be undertake

Under the Dentists Act, 1921, the powers a duties of the General Medical Council under t Dentists Act, 1878, and under the Medical Act, 188 which related to the keeping of the Dentists Regist and the administration of the Dentists Acts we largely transferred to the then newly constitut Dental Board of the United Kingdom. The regi tration of dental students at the commencement their dental studies, and the right of erasure of name from the Dentists Register, remain with t Council, but the duty of inquiring into disciplina cases rests with the Board, upon whose recommend tions the Council acts.

The Dental Board consists of a chairman and members. The chairman is appointed by the Pri Council. Other members of the Board are appoint by the Minister of Health, the Scottish Board Health, the Governor-General of Northern Irelan the General Medical Council (3), Direct Vote of t qualified dentists practising in England and Wal Scotland, and Ireland (3), Direct Representatives registered dentists not being qualified dentists (2).

Registration of Dental Students.

The General Medical Council's Regulations in rega to the registration of dental students which came in force on Jan. 1st, 1923, provide that the registration dental students shall be carried on at the Gene Medical Council Office in London, in the same manr as that of medical students, and be subject to t same regulations as regards age and prelimina examinations; but in the case of dental studer professional study may commence either at a rec nised dental hospital or school, or by pupilage w a registered dental practitioner.

Candidates for a diploma in dental surgery sho produce certificates of having been engaged for least four years in professional studies, and of havi received during 24 calendar months instruction dental mechanics. It is recommended that instr tion in dental mechanics be taken at a recogni dental hospital and school. If any part of su instruction be taken by the candidate as a pu with a registered dental practitioner, the time requi to be devoted to it shall be at least twice the ti required for the corresponding instruction taken a dental school. Two years' *bona-fide* apprentices with a registered dental practitioner, after registrat as a dental student, may be counted as one of four years of professional study. When a stud can show evidence of regular pupilage in den mechanics to a registered dental practitioner, pr to the passing of the prescribed preliminary a scientific examinations, he may be allowed to anted his registration for a period not exceeding one y prior to the passing of these examinations.

The Offices.

The address of the Registrar, to whom furth communications should be addressed, is as follo The Registrar of the General Medical Coun 44, Hallam-street, Portland-place, London, W. The offices of the Dental Board are adjoining.

A memorandum on the procedure to be adop by those who desire to enter the profession of medici with notes on costs and prospects, and a sim Memorandum in regard to Dentistry, may be obtai on payment of 1*s*. each.

THE MEDICAL EXAMINING BODIES AND SCHOOLS OF THE UNITED KINGDOM.

GUIDE TO THE FACILITIES FOR OBTAINING THE VARIOUS MEDICAL DEGREES AND OTHER QUALIFICATIONS FOR THE BRITISH MEDICAL REGISTER.

I.—ENGLAND AND WALES.

THE UNIVERSITIES.

UNIVERSITY OF OXFORD.

THERE are two degrees in Medicine, *B.M.* and *D.M.*, in Surgery, *B.Ch.* and *M.Ch.*, and diplomas in *Public Health* and *Ophthalmology*. The examinations open to men and women alike.

Only Graduates in Arts of the University are eligible the Medical and Surgical degrees. The most convenient course for the B.A. degree for intending duates in Medicine is to take Responsions, the liminary Science Examinations mentioned below, the Final Honour School of Physiology. To in the degrees of B.M. and B.Ch. the following minations must be passed: 1. Preliminary jects: Physics and Chemistry, Zoology, and any. 2. Professional. (*a*) First Examination: jects—Organic Chemistry, unless the candidate satisfied the examiners in Part I. Chemistry in Honour School of Natural Science; Human siology, unless he has obtained a First or Second s in Animal Physiology in the Honour School of ural Science; Human Anatomy. (*b*) Second mination: Subjects—Medicine, Surgery, Midry, Pathology, Forensic Medicine with Hygiene, eria Medica and Pharmacology. The First and nd Professional examinations are held in June December. The first B.M. examination may be ed at any time after the Preliminary Scientific minations. Anatomy and Physiology must be ed at the same time—Organic Chemistry may be n separately.

t any time after passing *First B.M. Examination*, candidate can, on producing certificates, present self for examination in the subjects of Pathology, ensic Medicine with Hygiene, Materia Medica and rmacology; but cannot, unless he is already a stered medical practitioner, enter for examination edicine, Surgery and Midwifery until the eighteenth n from his matriculation, nor until a period of at t thirty-three months has elapsed from the date passing the First B.M. Examination. He must in Medicine, Surgery and Midwifery at one and same time.

efore admission to the Examinations in Pathology Bacteriology, and Materia Medica and Pharmaco-, of the *Second B.M. Examination*, the student t produce certificates of having attended courses nstruction including practical work in Pathology, teriology, Post-mortem Clerking, Pharmacology, Pharmacy, either in Oxford or in a recognised ical School. Before admission to the remainder of second B.M. Examination, he must produce a ber of other certificates, including certificates of ng acted as Clinical Clerk and Dresser, each for months in the Wards, of instruction in Midwifery of attendance on Labours, of instruction in ctious Diseases and in Ophthalmology, of proficy in Vaccination and in the administration of sthetics, and of three academic years of hospital tice.

he degree of Bachelor of Surgery (B.Ch.) is granted that of B.M. after passing the above examinations.

he degree of Doctor of Medicine (D.M.) is ted to Bachelors of Medicine of the University who have entered upon their thirtieth term from Matriculation, and have submitted a dissertation which is approved by the examiners for the B.M. degree whose subjects are dealt with therein and by Professors in the Faculty of Medicine. The degree of Master of Surgery (M.Ch.) is granted after examination to Bachelors of Surgery who have entered upon their twenty-first term, and who are members of the surgical staff of a recognised hospital, or have acted as dresser or house surgeon in such a hospital for a period of six months. The examination, which includes Surgery, Surgical Anatomy and Pathology and Surgical Operations, is held annually in June, after the Second B.M. examination.

The examinations for the Diploma in Public Health in two parts are held in Trinity and Michaelmas terms; that for the Diploma in Ophthalmology is held annually in July. (See p. 421.)

Travelling Fellowship, Scholarships, and Prizes.—A Radcliffe Travelling Fellowship is awarded annually after an examination held in February. It is tenable for two years and of the annual value of £300. The examination is in Physiology, Pathology, and Hygiene, and is partly "practical." Candidates must be graduates in Medicine of the University. The holder must travel abroad for the purpose of medical study. Application should be made to the Radcliffe Examiners, Department of Medicine, University Museum. A Christopher Welch Scholarship of £100, tenable for four years, is awarded annually after examination. Candidates must be men undergraduate members of the University, who have not exceeded the twelfth term from their matriculation, or been admitted to any degree in the University. They may offer any one of the subjects, Animal Physiology, Botany, Zoology. A George Herbert Hunt Travelling Scholarship of the value of about £100 is awarded every second year to enable a Bachelor of Medicine to undertake three months' study abroad. A Rolleston Memorial Prize is awarded once in two years to members of the Universities of Oxford and Cambridge of not more than ten years' standing for an original research in some Biological subject, including Physiology or Pathology. The Radcliffe Prize, founded by University College (1907). is of the value of £50 and is awarded biennially (alternating with the Rolleston Memorial Prize) for research in some branch of medical science. The Theodore Williams Scholarships, each of the value of £50 a year for two years, are awarded annually in the subjects of Anatomy, Physiology, and Pathology. A Radcliffe Scholarship in Pharmacology, of the value of £50 for one year, is awarded annually by the Master and Fellows of University College. A King's College Hospital Burney Yeo Scholarship of £80 is awarded each year on the nomination of the Regius Professor of Medicine. The Scholarships and Exhibitions in Science which are offered by most Colleges are open to those who intend to pursue Medicine. The value of these scholarships varies, according to the Candidate's need, between £30 and £100 a year; the exhibitions vary in value from £30 to £100 per annum. The number of scholarships and exhibitions in Science offered annually is about forty. There are also Medical Scholarships of the value of £100 a year at University College and at Pembroke College. The Welsh Memorial Prize for Anatomical drawing is awarded annually, and is of the value of about £10.

More detailed information may be obtained from the University Calendar; from the Examination Statutes, 1923; from the Regius Professor of Medicine; from the Professors in the departments of medical science; and from the Dean of the Medical School, Oxford.

UNIVERSITY OF OXFORD: RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—225 beds. Courses of instruction are given in connexion with the Oxford University Medical School. These include (1) a course in Practical Medicine by the Regius Professor of Medicine; (2) clinical lectures by the Litchfield

Lecturers in Medicine and Surgery; and (3) tutorial instruction and demonstrations in special Regional Anatomy (medical and surgical), methods of Medical and Surgical Diagnosis, and Surgical Manipulation. (4) Pathological demonstrations and instruction in post-mortem work are given by the Assistant Pathologist. Opportunities are offered to students who wish to act as surgical dressers and clerks. A post-graduate course is held in the hospital in the autumn of each year.

UNIVERSITY OF CAMBRIDGE.

There are two degrees in Medicine, *M.B.* and *M.D.*, two in Surgery, *B.Chir.* and *M.Chir.*, and Diplomas in *Public Health and Hygiene*, *Tropical Medicine* and *Hygiene*, and *Medical Radiology and Electrology*. Increased facilities have been given to women students at Girton and Newnham, who are admitted to the *M.B.* Examinations.

The student must enter a College, or become a non-collegiate student, and keep nine terms (three years) by residence. He must pass the Previous Examination of the University before he comes into residence or therefrom obtain exemption, particulars of which may be obtained from the Registrar. He may then devote himself to medical study in the University. Or he may, as nearly all students now do, proceed to take a degree in Arts by passing the Examinations for the Ordinary B.A. degree, or an Honours degree by passing a Tripos Examination. The Natural Sciences Tripos is taken most frequently by medical students, as some of the subjects are practically the same as those for the First and Second M.B. examinations.

For the degree of Bachelor of Medicine (*M.B.*) five calendar years of medical study are required either in Cambridge or at one of the recognised Schools of Medicine. The first three or four years are usually spent in Cambridge till the student has passed the examination for Part I. of the Natural Sciences Tripos and the *First and Second M.B. examinations*. Hospital practice may be attended in Cambridge, but until the student has completed the course for the *Third part of the Second M.B.* it cannot count towards the two and a half years of hospital practice required before admission to the first part of the Third M.B. The laboratories for Botany, Chemistry, Physics, Biology, Zoology, Human Anatomy, Physiology, Biochemistry, Pathology, Bacteriology, Pharmacology, Psychology, and Public Health are well equipped. Addenbrooke's Hospital, the Infectious Diseases Hospital, the Cambridge Research Hospital, and the Field Laboratories are utilised for study and research.

There are three examinations for M.B. The *First* includes (1) General and Inorganic Chemistry, (2) Mechanics, (3) Physics, and (4) Elementary Biology. These parts may be taken together or separately. The *Second* is divided into three parts—viz. (1) Organic Chemistry, (2) Human Anatomy and Physiology, and (3) Pharmacology and General Pathology. The *Third* is divided into two parts: (1) Principles and Practice of Surgery (including Special Pathology and Midwifery and Diseases Peculiar to Women); and (2) Principles and Practice of Physic (including Diseases of Children, Mental Diseases, Medical Jurisprudence), Pathology (including Hygiene and Preventive Medicine), and Pharmacology (including Therapeutics and Toxicology). The examinations are partly in writing, partly oral, and partly practical, in the hospital, in the dissecting room, and in the laboratories. An Act has then to be kept by the candidate reading an original dissertation composed by himself and being examined orally on some subject approved by the Regius Professor of Physic. Candidates who have passed both parts of the Third M.B. examination are admitted to the registrable degree of Bachelor of Surgery (B.Chir.) without separate examination and without keeping an Act.

The degree of Doctor of Medicine (M.D.) may taken three years after that of M.B. or four years a that of M.A. The candidate is required to prod certificates of having been engaged in Medical St for five calendar years, and if an M.A. to pass the s examinations as are required for the degree of M An Act has to be kept, consisting of an original Th with *viva voce* examination; and a short extemp essay has to be written on a topic taken from general subject of his thesis, whether it be Physiol Pathology, Pharmacology, the Practice of Medici State Medicine, or the History of Medicine.

Candidates for the Degree of Master of Surg (M.Chir.) who are M.A.'s may be admitted to examination after they have become legally quali under the *Medical Acts* to practise surgery. Oth may be admitted to the examination when two ye at least have elapsed after they have completed that is required of candidates for the Degree B.Chir. He is required to pass an examination Principles and Practice of Surgery, Surgical Anato and Surgical Operations, and Pathology, and write an extempore essay on a Surgical Subject.

Diplomas are granted in Public Health, Hygiene, in Tropical Medicine and Hygiene, and Medical Radiology and Electrology. Candidates m hold a recognised medical qualification. (See p. 4

Scholarships and Prizes.—Medical studies endowed by the numerous Natural Science schol ships at the various colleges, information about wh can be obtained from the respective Tutors. Th are Natural Science scholarships at most of colleges and prizes in the ancillary medical subje Some of these are entrance scholarships; some n be gained by students already in residence, and wh suitable candidates are not forthcoming among st students the emoluments may be allotted to memb of other colleges. A valuable scholarship institu on behalf of Medicine is the Tancred Studentship Physic, tenable at Gonville and Caius College. T successful candidate must enter at the college wit a month or remove there if he be a member of a other college. Students are required to take degree of M.B. as soon as they are of sufficie standing but may hold the Studentship for a furt three years. Thus a student elected previous admission to college can draw the emolument, annual value of which is about £90, for eight yea Full particulars can be obtained from Mr. E. Gurdon, 28, Lincoln's Inn-fields, London. Amo other scholarships and prizes may be mentioned Balfour Studentship, for research in Biology, of value of £300 a year for three years, not restric to members of the University; the Frank Sm Studentship and Prizes for Botany and Zoology, a the Shuttleworth Studentship for Zoology or Phy ology tenable at Gonville and Caius College. The University Prize in Medicine, the Raymond Hor Smith Prize, is awarded to that candidate for the deg of M.D. who presents the best thesis for the deg during the academical year, provided that he has tak honours in a Tripos Examination.

An abstract of the Regulations and Schedules of range of the examinations in Chemistry, Mechan Physics, Biology, Pharmacology, and General Pa ology may be obtained upon application to Registrary, The Registry, Cambridge.

ADDENBROOKE'S HOSPITAL.—190 beds. Clini Lectures in Medicine and Surgery, in connexion w Cambridge University Medical School, are given this hospital twice a week during the academi year; and practical instruction in Medicine a Surgery is given in the wards and out-patien rooms by the physicians and surgeons daily dur the term time and vacations. The fee for pupils is 3 guineas a term, 9 guineas a year, 12 guin perpetual. Further information may be obtained fr Dr. Aldren Wright.

UNIVERSITY OF LONDON.

The University of London in 1900 was reconstituted ler the Act of Parliament, 1898, and became a ching as well as an examining body. Under the elopments upon the Internal side all the metro- tan medical schools became constituent colleges, le Clinical Units have been established at St. tholomew's, the London, St. Mary's, St. Thomas's, versity College Hospital, and the Royal Free spital.

nternal and External Students.—All the examina- is of this University are open to men and women e. Matriculated students of the University may either internal or external. Internal students of University are students who have matriculated he University and who are pursuing a course of ly approved by the University, either (*a*) under the ct control of the University or a committee ointed thereby; or (*b*) under one or more of the ointed or recognised teachers of the University. tres for preliminary and intermediate medical lies have been established by the University at versity and King's Colleges.

NIVERSITY COLLEGE.—University College has been stituted a University centre for the teaching of ical sciences. The College Faculty of Medical nces comprises the Departments of Physics, mistry, Botany, and Zoology (the Preliminary ical Sciences); also the Departments of Anatomy, ology, Physiology, Biochemistry, and Pharmaco- (the Intermediate Medical Sciences), and the artment of Hygiene and Public Health. Research k is undertaken in all departments. The comple- of the Institute of Medical Sciences, which the rosity of the Rockefeller Foundation made ible, provides exceptional facilities for research post-graduate study in anatomy, physiology, and rmacology. In particular might be specified the ortunities for investigation in human and com- tive embryology and neurology, in histology, ology, anthropology, biochemistry, and experi- tal physiology and experimental embryology. ngements exist for the close correlation of work he Institute with University College Hospital Medical School. Women students are admitted.

holarships and Prizes.—The first four items on present list require a complete intermediate course niversity College. The money value and subjects xaminations are as follows: (*a*) The Bucknill larship, 160 guineas; (*b*) and (*c*) two Entrance ibitions, 55 guineas each, Chemistry, Physics, ny, and Zoology; (*d*) Entrance Scholarship, a year for three years; (*e*) Cluff Memorial Prize, biennially, Anatomy, Physiology, Pharmacology, Chemistry; (*f*) Schafer Prize in Physiology, £18 nially; (*g*) Sharpey Physiological Scholarship, , Biological Sciences; (*h*) Morris Bursary for sons eceased professional men, by nomination, tenable wo years, £16 a year; and (*i*) five Gold and five r Medals awarded annually in various depart- ts. For further information apply to the Dean e Medical Faculty, University College, W.C.

ING'S COLLEGE.—The Medical Faculty at this ge gives instruction in the subjects of Medical ce for the Preliminary and Intermediate Exam- ons in Medicine and Surgery, and Dental Surgery, e University of London and of other Universities examining bodies, to students entering the ge directly, and also to students of the following hospital schools which prepare only for the examinations—viz., King's College Hospital, minster Hospital, St. George's Hospital, and ing Cross Hospital. The Faculty is open to men and women.

holarships and Prizes.—Two Warneford Entrance larships of £30 each for four years. Examination pril, subjects selected from Divinity, Classics, ce. Sambrooke Scholarship of £30 for three . Examination in April, subjects selected from Classics, Science. Worsley Scholarships: £100 in five annual instalments of £20. *At the end of the First Year* of study, the Rabbeth Scholarships (£30 and £15), the Carter Gold Medal and Prize in Botany, and the Hare Prize in Zoology are open for competition. *At the end of the Second Year*, the Second Year's Scholarship (£20) is open for competition. *At the end of the Third Year*, the Hughes Prize in Anatomy, the Huxley Prize in Physiology, the Inchley Prize in Pharmacology, and the Jelf Medal are open for competition. The Layton and the Berridge Research Studentships (£150 per annum each), the Daniell Scholarship in Chemistry (£40), Warneford Prizes (£25 and £15), Leathes Prize, Barry Prize, &c., are also open to Students of this Faculty. The majority of the Scholarships and Prizes are open to Regular Students only. For further information apply to the Dean of the Medical Faculty.

Medical students of the University of London, who are pursuing their medical curriculum in the metropolis will proceed to one of the recognised medical schools connected with the University. At four of these schools the preliminary studies will be taken at King's College, while at the other schools the whole curriculum can be taken out in connexion with the selected hospital. These hospitals are St. Bartholomew's Hospital, Charing Cross Hospital, St. George's Hospital, Guy's Hospital, King's College Hospital, the London Hospital, St. Mary's Hospital, the Middlesex Hospital, St. Thomas's Hospital, University College Hospital, Westminster Hospital, and the London (Royal Free Hospital) School of Medicine for Women. Various schools and hospitals are also recognised as schools of the University in special departments, and students may pursue their studies at other approved universities and medical schools, presenting themselves for examination at the University.

Faculty of Medicine.

The Faculty of Medicine of the University grants the joint degrees of M.B., B.S. (*Bachelor of Medicine and Surgery*), the higher separate degrees of M.D. (*Doctor of Medicine*) and M.S. (*Master of Surgery*), and the degree of B.D.S. (*Bachelor of Dental Surgery*) and the degree of B.Pharm. (*Bachelor of Pharmacy*); the two higher degrees being open only to candidates holding the M.B., B.S degrees of the University. The curriculum for the M.B., B.S. degrees is five and a half years from the time of matriculation, with certain exceptions which must be looked for in the official regulations of the University.

A. *Internal Students.*—For the Bachelor's degrees in Medicine and Surgery a student must normally, after registration as an internal student, have: (1) Attended prescribed courses of study for five and a half years in one or more schools of the University. (2) Passed the following examinations, under the conditions mentioned below: (*a*) The First Examination for Medical Degrees in Inorganic Chemistry, Physics, including Mechanics, and General Biology; (*b*) the Second Examination for Medical Degrees: Part I., Organic Chemistry; Part II., Anatomy, Physiology, and Pharmacology; (*c*) the Third Examination for Medical Degrees, or M.B., B.S. Examination in Medicine, Surgery, Obstetrics and Gynæcology, Pathology, Forensic Medicine, and Hygiene.

B. *External Students.*—For the Bachelor's degrees in Medicine and Surgery an external student must (1) have passed the Matriculation examination or have been exempted therefrom under Statute 116 not less than five and a half years previously; (2) have passed subsequent examinations similar to those required of an internal student; and (3) have been engaged in professional studies during the five and a half years subsequently to Matriculation and four and a half years subsequently to passing the First Examination for Medical Degrees at one or more of the medical institutions or schools recognised by this University for the purpose, one year at least of the four and a half years to have been spent in one or more recognised institutions or schools in the United Kingdom.

The First Examination for Medical Degrees (Inorganic Chemistry, Physics, including Mechanics, and General Biology) will take place twice in each year, commencing on the Monday following Dec. 7th and on the first Monday in July. It must be passed not less than nine months after matriculation.

The Second Examination for Medical Degrees (Part I.): Organic Chemistry.—This examination will take place twice in each year, commencing on the Thursday following the second Monday in March and on the Thursday following the first Monday in July. No candidate will be admitted to this examination until he has completed the First Examination.

The Second Examination for Medical Degrees (Part II.) takes place twice in every year, commencing on the Tuesday following the third Monday in March and on the Tuesday following the first Monday in July. No candidate shall be admitted to the examination unless he has passed the First Examination for Medical Degrees at least 18 months previously, and has passed Part I. of the Second Examination for Medical Degrees.

The Third or M.B., B.S. Examination.—The M.B., B.S. examination takes place twice in each year, commencing on the second Monday in November and on the first Monday in May. No candidate will be admitted to this examination unless he has completed the Second Examination for Medical Degrees, together with a course of study summarised below, nor within three years from the date of passing the Second Examination, Part II., in Anatomy and Physiology. The course of study comprises introductory course in (1) Clinical Medicine; (2) Clinical Surgery; and (3) Clinical Pathology; (4) Experience as Clinical Clerk; (5) Clinical Medicine; (6) (*a*) Fevers, (*b*) Children's Diseases, (*c*) Venereal Diseases, (*d*) Mental Diseases (at a recognised Asylum), (*e*) Dermatology, (*f*) Vaccination, (*g*) Materia Medica and Pharmacy; (7) Experience as a Surgical Dresser; (8) Clinical Surgery; (9) Ophthalmology; (10) Oto-Rhino-Laryngology; (11) (*a*) Operative Surgery, (*b*) Applied Anatomy, (*c*) Administration of Anæsthetics, (*d*) Dental Surgery, (*e*) Orthopædic Surgery; (*f*) Mechano-therapeutics; (12) Obstetrics and Gynæcology; (13) Lying-in Hospital; (14) The conduct of at least 20 Labours; (15) Antenatal Clinic; (16) Experience as a Clinical Clerk in Gynæcological Work; (17) General Pathology, Morbid Anatomy, Bacteriology, and Chemical Pathology; (18) Work in the Post-Mortem Room; (19) Clinical Laboratory; (20) Forensic Medicine; (21) Hygiene. He must have attended the Medical and Surgical Practice of a recognised hospital for two years, and have held the posts of clinical clerk and surgical dresser for periods of six months each. Candidates will be examined in Medicine, Pathology, Forensic Medicine and Hygiene, Surgery, Obstetrics and Gynæcology. The subjects may be divided into two groups—namely: (1) Medicine, Pathology, Forensic Medicine, and Hygiene; and (2) Surgery, Obstetrics, and Gynæcology. These groups may be taken either separately or together. Bachelors of Medicine who graduated before May, 1904, may obtain the B.S. by passing the Surgical part of the M.B., B.S.

Doctor of Medicine.—The examination for this degree takes place twice in each year, commencing on the second Monday in December and on the first Monday in July. Candidates may present themselves for examination in one of the following branches—namely: (1) Medicine; (2) Pathology; (3) Psychological Medicine; (4) Midwifery and Diseases of Women; (5) State Medicine; and (6) Tropical Medicine. Any candidate for the degree of M.D. (except in branch 5) may transmit to the Registrar a thesis for approval and may be exempted from a part or from the whole of the written examination.

Master of Surgery.—The examination for the degree of Master of Surgery takes place twice in each year: (1) Surgery; (2) Dental Surgery; (3) Ophthalmology; (4) Laryngology, Otology, and Rhinology. A thesis may be submitted as for M.D.

Bachelor of Pharmacy.—The course extends over three years.

Full details of the prescribed curricula can be obtained free on application to the Academic Registrar, University of London, South Kensington, S.W. 7.

MEDICAL SCHOOLS OF THE UNIVERSITY OF LONDON.[1]

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.—The hospital contains 757 beds, of which 687 are for patients in the hospital at Smithfield and 70 at the Alexandra Hospital, Swanley. Special departments have been organised for Diseases of Women and Children, the Eye, Ear, Larynx, and Skin, as well as for Orthopædic and Dental Surgery, and for Electrotherapeutics and X Ray work. Whole-time Clinical Units under Professors of Medicine and Surgery have been established.

Ten house physicians and ten house surgeons are appointed annually, are provided with room and board, and receive £80 a year as salary. A resident midwifery assistant, an ophthalmic house surgeon, and a house surgeon for diseases of the throat, nose, and ear, and a house surgeon for orthopædic surgery are appointed every six months and are provided with rooms and board and receive a salary of £80 a year. Three resident administrators of anæsthetics are appointed, the senior for a year at a salary of £150, and two juniors for six months with a salary at the rate of £80 per annum with board and rooms. An extern midwifery assistant is appointed every three months, and receives a salary of £80 a year. The clinical clerks, the obstetric clerks, the clerks to the medical out-patients, the dressers to the surgical in-patients and to the out-patients, and the dressers in the special departments are chosen from the students. A residential College is attached to the hospital.

There are quarters for the resident staff, casualty medical, surgical, and special out-patient departments, casualty wards, dispensary, and clinical lecture theatre. There is a chemical laboratory attached to the College as well as a laboratory devoted to instruction in Public Health. A block is devoted to Pathology, and contains the post-mortem room as well as extensive laboratories for bacteriology, clinical pathology, and pathological chemistry. *The Medical College Buildings* include three large lecture theatres, a large dissecting room, laboratories for chemistry, biology, morbid anatomy and histology, and public health, as well as a spacious library (containing 14,000 volumes), a well-appointed museum of anatomy, physiology, comparative anatomy, materia medica, botany, and pathological anatomy. The pathological museum is complete. A new block in Gilston street has recently been acquired and has been fitted up as lecture theatres and laboratories for physics, chemical physiology, experimental physiology, histology, and pharmacology.

Special Classes for the Primary and Final F.R.S. are held twice yearly. *Instruction in Preliminary Science* is given to University of London students in chemistry, biology, and physics throughout the year. Facilities for research work are afforded in the Clinical Units and Laboratories of pathological and other departments. *A Vacation Post-graduate Course*, adapted to general practitioners, is given annually.

Scholarships given in aid of Medical Study.—There are five of the Scholarships and the Exhibition—namely (*a*), (*b*), two Entrance Scholarships in Science of the respective values of £75 and £100; (*c*) Entrance

[1] Of these schools that of the Royal Free Hospital is restricted for women; University College admits men and women to the whole course, the number of women being limited; King's College admits men and women to the intermediate subjects, the remainder admit men only.

olarship in Arts, £100; (*d*) Jeaffreson Exhibition, ; and (*e*) Shuter Scholarship, £50—a full or versity course at St. Bartholomew's Hospital is iired. The awards of (*a*) and (*b*) are made after mination in selections from the subjects of mistry, Physics, Zoology, Botany, Physiology, tomy, and Pathology; (*c*) and (*d*) are awarded r examination in Mathematics, Latin or ek or French or German, a second language or mistry or Physics; (*e*) is awarded after competitive mination among Cambridge Graduates in Anatomy Physiology. The more important of the other olarships and prizes are as follows:—Four Junior olarships—(*f*) No. 1, £30, Anatomy and Physiology; No. 2, £20, Anatomy and Physiology; (*h*) No. 3, Chemistry, Physics, and Biology; (*i*) No. 4, £15, mistry, Physics, and Biology; (*j*) Senior Scholar-, £50, Anatomy, Physiology, and Chemistry; (*k*) kes Scholarship, £30 and medal, Clinical Medicine; nd (*m*) two Brackenbury Scholarships, £39 each, in Medicine and one in Surgery; (*n*) Sir G. rows Prize, 10 guineas, Pathology; (*o*) Skynner e, 13 guineas, Regional and Morbid Anatomy; Matthews Duncan Medal and Prize, £20, Midwifery Gynæcology; (*q*) Luther Holden Research olarship in Surgery, awarded by election, £105; Lawrence Research Scholarship and Gold Medal Pathology, awarded by election, £115; and Baly Scholarship in Clinical Medicine, £75, rded by examination.

he recreation ground of 10 acres is at Winchmore for the use of the members of the Students' on, which all students are expected to join. The dents' Union contains a large reading and smoking n, a committee and writing room, luncheon and ng hall, and a miniature rifle range.

nformation may be obtained on application to the n of the Medical College: Dr. T. W. Shore. The rden of the Residential College is Mr. R. M. Vick.

HARING CROSS HOSPITAL.—The Hospital, to which School is attached, contains 300 beds. There special departments for Mental Diseases, Mid-ry, Diseases of Women, of Children, of the Skin, , Throat, Nose, and Teeth, for Orthopædic Cases, Ray work, and for Electrical Treatment.

n the Medical School Demonstratorships and istant Demonstratorships are open to students the School. Six House Physicians, six House geons, two Obstetric and Gynæcological House geons, and two House Surgeons to the Special artments are appointed annually. The large portion of resident appointments to the number students makes it probable that a student of inary ability will be able to obtain one of these ointments.

he following appointments are open to students r they have held resident appointments: Resident lical Officer, at a salary of £400 per annum; istrar to the Medical, Surgical, Obstetrical and , Nose, and Throat Departments, at £150 per um.

y an agreement with the University of London School sends its Primary and Intermediate dents to receive their lectures and practical work King's College, which is situated within four minutes' k.

inal studies are taken in the school and hospital, re systematic lectures, demonstrations, and rial classes are arranged to cover all the subjects essary for qualifying examinations. Departments also available for other final subjects of Materia lica and Operative Surgery.

n Institute of Pathology with a whole-time staff scientific workers and fully equipped laboratories been established. Students receive their training Preventive Medicine, Pathology, Bacteriology, and chemistry here, and are encouraged to undertake earch. Special facilities are available for post-duate research and study.

The course in Ophthalmology is given in the Royal Westminster Ophthalmic Hospital. Special demonstrations are arranged for Post-graduates.

One Epsom School Scholarship, two Oxford and Cambridge Scholarships, and one Scholarship in Anatomy and Physiology open to students of King's College, are offered for competition each year. In addition there are a number of Exhibitions.

The Museum contains over 4000 specimens, including a notable collection of over 800 gynæcological specimens, the Cuthbert Lockyer Collection.

The social comfort and convenience of students are met by library, reading, and smoking-rooms, refreshment-room, in a Students' Club. The Club, which is under the control of a committee of students, provides needful athletic recreation, and includes also a medical society.

Further information may be obtained on application to the Dean, Dr. F. H. Young.

ST. GEORGE'S HOSPITAL.—This hospital has a service of 436 beds, of which 180 are allotted to surgical, 150 to medical cases, and 100 are at the Convalescent Hospital at Wimbledon. There are all the usual special clinical departments. One ward is set apart for Diseases Peculiar to Women, and there is a Maternity Ward of 11 beds. Children's beds are placed in the women's wards. There are two ophthalmic wards.

Twelve house physicians, 12 house surgeons, and 12 casualty officers are appointed annually. Special attention is directed to the following paid appointments, among others, which are open to students after they have held house office:—Resident Assistant Physician and Resident Assistant Surgeon, at £350 per annum each; Medical Officer to the Atkinson-Morley Convalescent Hospital, at £300 per annum; Medical Registrarship at £200 per annum, Surgical Registrarship at £200; Assistant Curatorship of the Museum at £100; Obstetric Assistantship (Resident) at £50; the post of Resident Anæsthetist at £100; the posts (3) of Junior Anæsthetists, each at £30.

Entrance Scholarships and Endowed Prizes of a total value of £700 are awarded annually; a detailed list is placed below. The entire teaching and laboratories are now devoted to purely clinical subjects, and arrangements have been made with the authorities of King's College for students who enter the first, second, or third year of the curriculum as students of St. George's to carry out the necessary courses of instruction at that College. Students then complete their course, without payment of any entrance fee, in a school entirely devoted to clinical work.

Scholarships and Prizes.—At this school five entrance scholarships are given, the money value and the subjects of examination being as follows: (*a*) and (*b*) two William Brown Exhibitions, £120 and £80 respectively; (*c*) and (*d*) two University Entrance Scholarships, 90 guineas and £70 respectively; (*e*) Devitt-Pendlebury Scholarship, £50, Anatomy and Physiology, except in the case of (*c*), subject of examination for which is General Pathology.

This year, in addition to these Scholarships, Exhibitions, each of the value of £40 and up to six in number, will be awarded to candidates of approved merit in the Entrance Scholarships Examination. The others are as follows: (*f*) Allingham Scholarship in Surgery for Students qualified not more than two years, £85; (*g*) and (*h*) two Brackenbury Prizes, one in Medicine and one in Surgery, £33 each, open to students of not more than five years' standing; (*i*) H. C. Johnson Memorial Prize, £19, Practical Anatomy; (*j*) Pollock Prize, £23, Physiology, Physiological Chemistry, and Histology; (*k*) Clarke Prize, £5; (*l*) Thompson Medal, £9, Clinical Reports; (*m*) Brodie Prize, £8, Clinical Reports; (*n*) Webb Prize, open to perpetual pupils, £34, Bacteriology; (*o*) Sir Francis Laking Memorial Prize, £65, open to students having registrable qualifications.

The St. George's Hospital Club, with smoking- and luncheon-rooms is on the hospital premises and an athletic ground at Wimbledon, is an amalgamation of the Hunterian Society, the *Gazette*, and the Rugby football, cricket, lawn tennis, boxing, rifle, and golf clubs. Students have the advantage of a library of medical and scientific books which is kept up to date.

Further information may be obtained from the Dean of the Medical School, Dr. A. Feiling.

GUY'S HOSPITAL.—This hospital contains 642 beds. The whole of the medical school has been rebuilt within recent years. It provides ample accommodation, with modern equipment, for all the non-clinical subjects of the medical curriculum.

The following special departments are attached to the hospital: Departments of ophthalmology, laryngology, gynæcology, diseases of children, diseases of the nervous system, dermatology, otology, actinotherapeutics, anæsthetics, dentistry, orthopædics, vaccine, tuberculosis, genito-urinary and venereal diseases, Salomon's Welfare Centre (for Maternity and Children). Dresserships and clerkships in the various special departments are held by students in turn.

There is a Venereal Clinic, in accordance with the Scheme of the Local Government Board and London County Council. Lectures and clinical instruction are given, to which Medical Students and Practitioners are admitted without fee.

House physicians, house surgeons, out-patient officers, assistant house surgeons, obstetric residents, house surgeons in the departments of ophthalmology, laryngology, and genito-urinary diseases, house physicians in the department for diseases of children, and clinical assistants are appointed from among recently qualified students according to merit.

Scholarships.—Six entrance scholarships are awarded annually as follows:—(*a*) one War Memorial scholarship, of the value of £200, to be awarded alternately in Arts and Science (next award, June or July, 1930 in Science); (*b*) one Open Arts Scholarship of £100 for students under 19 years of age; candidates may offer themselves in either of the following groups: (1) English and any two of the following—viz., Latin, Greek, or Mathematics; (2) English and any two of the following—viz., French, German, and Mathematics; (*c*) one Open Junior Science scholarship for students under 20 years, £100; subjects, any three of the following: Inorganic Chemistry, Physics, Biology, and Mathematics; (*d*) a confined Junior Science scholarship of the value of £100 is offered for competition, annually in June or July, to candidates who have attended the Preliminary Science Classes at this School; (*e*) two open Senior Science scholarships: (1) a War Memorial scholarship of the value of £100, awarded annually in September; (2) an open scholarship of the value of £80, awarded annually in September, for students who have completed the curriculum for, or passed the examinations in, Anatomy and Physiology for a medical degree in any University of the British Empire, and who, during the nine months immediately preceding the Scholarship examination, have not entered as students in any Metropolitan Medical School other than Guy's; subjects, any two of the following: Anatomy, Physiology, Organic Chemistry and Pharmacology, General Pathology.

Within the grounds of the hospital are situated the residential college, with accommodation for 35 students, the students' club, with reading, smoking, luncheon, and dining-rooms, a fives court, and swimming bath. The athletic ground and club house is situated at Honor Oak Park, and can be reached in 15 minutes from the hospital.

Further information can be obtained from the Dean of the Medical School, Prof. T. B. Johnston.

KING'S COLLEGE HOSPITAL.—The final subjects the curriculum are taught at the Medical School King's College Hospital, which is situated at Denm Hill, S.E. 5.

The hospital has 400 beds, and provision ultimately be made for 600. There are spec departments for Bacteriology, Children, Clinical Pat logy, Dermatology, Gynæcology and Obstetri Laryngology, Massage, Neurology, Odontology, O thalmology, Orthopædics, Otology, Physical Tre ment, Psychological Medicine, Radiology, Rhinolo and Urology, each in charge of a specialist and staff. Clinics are also held in applied pharmacolo cardiology, and medical chemistry.

Appointments.—The appointments open to stude are those of clinical assistant to the special dep ments; medical, surgical, obstetric, and patholog tutorships; resident casualty officers, house physici and house surgeons; resident anæsthetist; resid radiologist; bacteriologist; clinical pathologi pathological, medical, surgical, and obstetrical re trarships. Sixteen resident medical and surg officers are appointed half-yearly.

Scholarships and Registrarships (those in connex with King's College have already been enumerated Scholarships of the total value of £1095 are awar annually. These include (*a*) Medical Entra Scholarships—Science, £50; Anatomy and Phy logy, £50; Pathology, £75; (*b*) two Burney Entrance Scholarships, £80 each, open to student Oxford and Cambridge on the recommendation of Regius Professors; (*c*) two Raymond Gooch Scho ships, £120 each, open to students of British Uni sities on certain conditions; (*d*) an Epsom Col Scholarship, value £50 at least, offered annually a student of Epsom College who has taken the part of the courses for Medical Degrees at the Uni sities of Oxford, Cambridge, or London; (*e*) a Sea Scholarship, £50 a year for a period not excee five years, restricted to the sons of poor clergy of the Church of England; (*f*) Senior Scholar (Clinical Studies), £40. The holders of the Warne and Sambrooke Scholarships awarded by Ki College are required to take the subjects of preliminary and intermediate examinations at Ki College, and the final subjects at King's Co Hospital. Three Sambrooke Registrarships, ope matriculated stidents who have filled certain app ments in hospital.

Prizes.—Tanner Prize, £10, Obstetrics and Dise of Women; Todd Prize, £4 4*s.* and medal, Cli Medicine; Burridge Prize, £4 4*s.*, Forensic Medic Jocelyn Almond Prize, £5 5*s.*, Diseases of Child Wallis Prize, £10, History of Dentistry; 13 Prizes, £3 each.

The King's College Hospital Clubs and Soci Union consists of the Listerian and Musical Socie the Students' Common Rooms, and the va athletic and sports clubs. The athletic ground, six acres in extent, is on Dog Kennel Hill, abou minutes' walk from the hospital. There are Tennis Courts in the grounds of the Hospital of "The Platanes"—a hall of residence for stu belonging to the hospital.

The Calendar of the School will be sent on ap tion to either of the following: Dr. H. Willou Lyle, Dean; Mr. S. C. Ranner, Secretary of Medical School.

LONDON HOSPITAL.—The hospital, with its Me College and Dental School, is situated in Mile road, and contains 837 beds. There are sp departments for diseases of the Eye, Ear, Nose Throat, Skin, Teeth, and Pediatric, Orthop Venereal, Radiological, Electro- and Physico-t peutical and Inoculation Departments.

To each medical and surgical firm throughou hospital there is attached a First Assistant, w responsible for instructing the clerks or dress

firm in elementary medicine and surgery, and o assists the honorary members of the firm in preparation of their demonstrations. In the partment of Obstetrics and Gynæcology there are o assistants and two resident accoucheurs. Special rses of lectures and demonstrations are arranged Medicine and Surgery and their ancillary subjects. portunities for research are provided under the ervision of the staff.

Owing to the large number of patients more appointnts are open to students before and after qualifican than at any other hospital. Holders of resident ointments have free board. Special classes are d for the examinations of the University of London, the Fellowship of the Royal College of Surgeons, the Membership of the Royal College of Physicians, l for other higher examinations. Special entries for dical and surgical practice can be made.

A Clinical Unit in Medicine, under the charge of whole-time director, provides for the more elaborate thods of diagnosis and treatment, and takes a ding part in the initiation and coördination of dical research. The director has an assistant ector, two assistants, and two house physicians.

Scholarships and Prizes.—The following is a list of Scholarships and Prizes :—Price Scholarship £100, l one Entrance Scholarship of £50, subjects of First dical Examination at the University of London ; som College Scholarship, free education, subjects First Medical Examination as above; Price holarship, open to students of Oxford and mbridge Universities, (1) £100, Pathology ; (2) £75, man Anatomy and Physiology ; Buxton Prize, £40, jects of Anatomy and Physiology ; three Prizes Clinical Work, £20 each, Medicine, Surgery, and stetrics and Gynæcology ; Sutton Prize, £20, thology ; Duckworth Nelson Prize, biennial, £10, actical Medicine, and Surgery ; Letheby Prizes (2), 5, Chemistry and Chemical Pathology ; four essers' Prizes, amounting to £20, zeal, efficiency, l knowledge of Elementary Clinical Surgery ; tchinson Prize, triennial, £60, Clinical Surgery ; ves Prize, £15, Clinical Surgery ; two Practical atomy Prizes, £6 and £4 respectively ; Andrew rk Prize, £14, Clinical Medicine and Pathology ; A. M. Ross (Prox. Acc.) Prize, £10 10s., Clinical dicine and Pathology ; James Anderson Prizes , £20, Elementary Clinical Medicine ; Arnold ompson Prize, £15, Diseases of Children ; K. E. D. yne Prize, Research Scholarship, £20, Pathology ; d Liddle Prize, triennial, £120.

Medical Research Funds.—Funds to the value of over),000 permit of financial assistance being given to dents and graduates engaged in Medical Research. Two Residential Hostels are provided for students. e recent additions to the hospital and college ildings include the Dunn Clinical Laboratories, e Bearsted Clinical Theatre, the Bernhard Baron stitute of Pathology, and a hostel for 40 resident dical officers. The Union Athletic Ground, 13 acres, within easy reach of the hospital.

Dean : Prof. William Wright.

ST. MARY'S HOSPITAL.—The Hospital and Medical hool have on one side a poor district of 500,000 rsons, and on the other side the residential districts Kensington and Bayswater. The hospital contains) beds and structural additions during the past ar have added two new operating theatres. By cheme of affiliation, for teaching purposes, of certain ighbouring hospitals, the teaching facilities extend er 1000 beds. The Medical School provides comte courses of instruction, and students can join once on passing a Preliminary Examination in ts. Terms begin in October, January, and April. Clinical Units in Medicine and Surgery were estabned in 1920. Lying-in beds have recently been ded, and, in addition to this, arrangements have en made by which all students take out a short course of instruction in Practical Midwifery at Queen Charlotte's Hospital without additional fee.

Students specially interested in Pathology and Bacteriology have singular advantages at St. Mary's. The institute comprises seven special departments, the whole being under the personal direction of Sir Almroth Wright. Certain Research Scholarships of £200 each are awarded annually to students working in the departments of the institute ; and research beds have been instituted. Clerkships in Pathology, Bacteriology, and Chemical Pathology, lasting for a period of three months, are open to students of the fifth year, and enable them to carry out the Pathological and Bacteriological investigations of the wards, and learn the necessary technique under supervision. Seventy-two of these posts are available annually. Numerous appointments are open to newly qualified members of the Medical School, including ten salaried posts with salaries varying from £200 to £750 per annum.

Entrance Scholarships.—Two Entrance Scholarships of the value of £210 each are awarded annually, by nomination in July, the Geraldine Harmsworth Scholarship, £200, and one or more University Scholarships of £200 are awarded in July.

The Athletic ground (10 acres) is situated at Wembley and can be reached in 20 minutes by a constant service of trains. A large pavilion has recently been added.

For further information apply to the Dean of the Medical School.

MIDDLESEX HOSPITAL.—The hospital contains over 450 beds, with special wards for Cancer, Maternity and Gynæcological and Ophthalmological cases, and for Diseases of Children. Other special departments include those for Diseases of the Eye, Ear, Nose and Throat, and Skin ; Nervous diseases, Orthopædic cases, Diseases of the Rectum and Venereal Diseases. There is also an Electrotherapeutic department. The Cancer Charity, containing 92 beds and Special Investigation Laboratories, offers unrivalled opportunities for the study of Cancer, both in its clinical and pathological aspects. In the Electrotherapeutic Department, students obtain instruction in the Treatment of Lupus and Cancer by the X ray method of treatment.

All appointments are made without fee of any kind, and the following are appointed at intervals annually : six house physicians, eight house surgeons, two obstetric and gynæcological house surgeons, two casualty medical officers, two casualty surgical officers, four resident anæsthetists, and four resident officers to the special departments. The medical and surgical casualty officers are appointed twice a year. Nine registrars are appointed annually. Non-resident qualified clinical assistants are appointed to assist in the various out-patient departments. Clinical clerks and surgical dressers are also appointed in every department.

The Medical School, which includes the Bland-Sutton Institute of Pathology, the Courtauld Institute of Biochemistry, and the Cancer Research Laboratories is fully equipped for the theoretical and practical teaching of all the subjects of the medical curriculum, and for the Diplomas in Public Health, for which two courses are held yearly. Ample laboratory and class-room accommodation is provided. The teaching staff includes 6 Professors, 32 recognised Teachers, 10 Demonstrators, 4 tutors. The Bland-Sutton Institute of Pathology is completely equipped for routine hospital investigations, teaching and research work, and contains a lecture theatre, large pathological, bacteriological, and clinical laboratories, also smaller laboratories for individual research work. A well-equipped Anatomical and Pathological Museum and Reference Library offer every facility.

Other features of interest are : the course in Medical Radiology and Electrology, under the direction of the "Joel" Professor of Physics ; D.P.H. course, under the direction of Dr. Charles Porter, M.O.H., St. Marylebone, Prof. J. McIntosh, and Prof. W. B.

Tuck. A primary F.R.C.S. course is held twice yearly, and special classes to prepare students for the Intermediate Examinations of the Universities.

Scholarships and Prizes.—Two Entrance Scholarships, value £100 each, and two University Scholarships, value £90 and £60, are awarded annually in September. The successful candidates are required to become general students of the school. A Freer Lucas Scholarship is awarded annually on the nomination of the Headmaster of Epsom College. There are also two Broderip Scholarships, value £60 and £40 respectively; the Lyell Gold Medal and Scholarship, value £55 5*s.*; the John Murray Medal and Scholarship, value £25 (awarded every third year); the Freeman Scholarship, value £30; the Hetley Clinical Prize, value £25; the Leopold Hudson Prize, value 11 guineas; and the Second Year's Exhibition, value 10 guineas. There are also numerous class prizes.

The Amalgamated Students' Club includes the following: Medical Society, Common Room Society, Musical Society, cricket club, football clubs, athletic club, rowing club, chess club, lawn tennis club, and hockey club. There are a restaurant and gymnasium in the school buildings, and large athletic grounds at N. Wembley, with new pavilion.

For further particulars apply to the Dean or the Secretary of the Medical School.

ST. THOMAS'S HOSPITAL.—This Hospital contains 644 beds. There are special departments for the treatment of women, children, diseases of the eye, ear, nose and throat, skin, teeth, and for orthopædics. Nervous and mental diseases are treated in special departments. An electrocardiograph has been installed for the investigation of diseases of the heart. The Tuberculosis Department forms a part of the Lambeth scheme for treatment of patients and for instruction. The Venereal Department has been established as part of the London County Council scheme. Departments for Radiology, Electrotherapy, Phototherapy, Massage and Remedial Physical Exercises are also special features. A speech clinic has been inaugurated in connexion with the Children's Department. Exceptional facilities are offered in the hospital laboratories for the study of General Pathology, Clinical Pathology, Chemical Pathology, and of Treatment by Serums and Vaccines. Surgical operations take place in the main theatres every day, except Saturdays, at 2 P.M. Clinical teaching in the wards, out-patients' and special departments, is available every day of the week. Clinical lectures are delivered every Wednesday during the sessions. A Clinical Unit in Medicine has been established.

All appointments in the hospital are open to students without extra fee. Clinical clerks and dressers for in- and out-patients are selected from students who have completed their third years' work. Every student acts as clerk in the post-mortem room and in one of the pathological laboratories, takes his turn on maternity duty under proper supervision in the maternity ward and district, thus obviating any necessity for seeking instruction elsewhere. Students are instructed in the administration of anæsthetics by the hospital anæsthetists.

The arrangements are made to meet the requirements of all the Examining Bodies. Special classes are held for the examinations at the University of London and for the First and Final Fellowship Examinations of the Royal College of Surgeons of England. Tutorial classes in all subjects precede the various examinations. The hospital is easily accessible from all parts.

Appointments.—A Resident Assistant Physician and a Resident Assistant Surgeon, salary £225 each per annum, and a Resident Anæsthetist, salary £200 per annum, are appointed annually. Two Hospital Registrars, Medical and Surgical, at an annual salary of £250 each are appointed yearly. The tenure of these offices may be renewed for a term not exceeding two years. A Pathological Registrar to the Department of Obstetrics and Gynæcology (at an annu salary of £250), an Ophthalmic Registrar (at an annu salary of £50), and an Orthopædic Registrar (unpai are appointed yearly. Two Senior Resident Casual Officers (Medical and Surgical) are appointed year Eight Resident Casualty Officers and Anæstheti are appointed every six months. Seven House Ph sicians (including two Obstetric House Physicia and one House Physician to the Department of Disea of Children), nine House Surgeons (including t Ophthalmic House Surgeons, one Orthopædic Ho Surgeon, and two House Surgeons to the Ear, Nose a Throat Department) are appointed every six mont Clinical Assistants in the Special Departments appointed every three months, and hold office six months if recommended for re-election. Th are three Assistants in the Department of Patholog the Senior receives £600 a year, and the two Juni £450 each.

Scholarships and Prizes.—At this school there five Entrance Scholarships—namely, two in A equivalent to the tuition fees for the first year study; two in Natural Science, of the value of £ and £60 respectively; and the University Scholars of £100 in any two of the following: Anaton Physiology, Pathology, Chemistry. The value of entrance scholarships must be taken out in tuition f The money value and subjects of examination of remainder are as follows: (*a*) William Tite Scholars for second-year students, £25; (*b*) and (*c*) Musgr Scholarship or (alternately) Peacock Scholarship, e for third-year students and tenable for two years, each; (*d*) Mead Medal, Medicine, Pathology Hygiene; (*e*) Wainwright Prize, Medicine; (*f*) To Prize, Medicine; (*g*) Cheselden Medal, Surgery Anatomy; (*h*) Clutton Memorial Medal in Clin Surgery, biennial; (*i*) Beaney Scholarship, £ biennially, Surgery and Surgical Patholo y; Solly Medal and Prize, biennial, Reports of Cas (*k*) Sutton Sams Prize, biennial, Report of Cas (*l*) Bristowe Medal, Pathology and Morbid Anaton (*m*) Hadden Prize, Pathology and Morbid Anaton (*n*) Grainger Testimonial Prize, £31 10*s.*, Anatomy Physiology; (*o*) Louis Jenner Research Scholars tenable for two years, £60 annually, Patholo (*p*) School Council Research Scholarship, £250 annum, tenable for two years; (*q*) John and Tem Research Fellowship, tenable for two years, £ Children.

St. Thomas's House, the New Students' C recently opened, comprises spacious dining-, smoki and reading-rooms, and accommodation for s 60 resident students. There is no occasion for stud to leave the hospital premises during working ho

Further information may be obtained from Medical Secretary of the School, St. Thomas's Hosp

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UNIVERSITY COLLEGE HOSPITAL MEDICAL SCH —The final subjects in the curriculum are taugh the Medical School of the hospital, which has 526 b including 74 in the new obstetric hospital. The co of instruction is suitable for the examinations at Universities of Oxford, Cambridge, Durham, and o British Universities, and for the medical educa required by the Examining Board in England and Society of Apothecaries. Clinical Units in Medic Surgery, and Obstetrics and Gynæcology are no operation. The whole-time Directors of the Units concerned with the organisation of the teaching ge ally, but the honorary staff are responsible for largest share of the teaching in the wards and patient Department of the hospital. The departm of otology, rhinology, and laryngology (the Royal Hospital) has been provided with a separate buil in Hunter-street, adjacent to the obstetric hosp It contains 39 beds, including eight private ward patients of limited means. The hospital is equi with all modern appliances for investigation. new buildings of the Obstetric Hospital of 74 (rendered possible by the Rockefeller Benefact the new Residents' House (with accommodatio

esidents and students), the extension to the Nurses' ne, and new research laboratories for the Medical ool are now finished and in full occupation. Twelve nen students are admitted annually.

hose who are desirous of carrying out original arch in Pathology, including Morbid Anatomy, teriology, Experimental Pathology, and Chemical hology, are admitted to work in the laboraes of the school by the Professor of Pathology, under certain conditions can receive grants from Charles Graham Medical Research Fund. A ial course of instruction is given in conjunction University College for preparation for the examions for Diplomas in Public Health of the various versities and examining bodies. In the Dental ool in Great Portland-street, formerly known the National Dental Hospital, there is afforded opportunity for attending lectures and practical ruction in diseases of the mouth and teeth.

ppointments.—Clerkships and dresserships to the sicians, surgeons, anæsthetist, and pathologist are tted amongst the students of the hospital. ernity students are appointed each month and le in the Students' House connected with the ical School and Hospital. Fourteen house sicians, six house surgeons, ten obstetric assistants, house surgeons to the Royal Ear Hospital (of the l number of resident officers not more than three be held by women students at any one time) are cted annually by examination from among the or students who have a medical qualification. house officers reside free in the hospital. In ition to these posts there are certain special ointments which are vacant from time to time are filled by senior students of the hospital: ident Medical Officer, Surgical Registrar, Medical istrar, Obstetric Registrar, Harker-Smith Cancer istrar, Ophthalmic Registrar, Registrar to the al Ear Hospital, Casualty Medical Officer and a ualty Surgical Officer, Assistants in Ear and oat, Skin and Venereal Diseases Departments, House Anæsthetist.

cholarships and Prizes (those in connexion University College have already been enumed).—At this School the first two Scholars (*a*) and (*b*) entitle the holder to a complete rse at University College and University College pital Medical School; the second two (*c*) and entitle to a final course at the Medical School. money value and subjects of examination are as ows:—(*a*) Entrance Scholarship, Bucknill, 135 neas, Chemistry, Physics, Botany, and Zoology; Epsom Free Medical Scholarship, subjects of liminary Scientific Examination and Nomination Epsom College; (*c*) and (*d*) two Goldsmid Entrance ibitions 112 guineas each, Anatomy or Physiology, General Pathology; (*e*) Graham Scholarship in hology, £300 per annum for two years, awarded the Senate of the University of London; (*f*) inson Morley Scholarship, tenable for three years, per annum, Surgery; (*g*) Atchison Scholarship, able for two years, £55 per annum, General ficiency in Medical Studies; (*h*) Magrath Clinical olarship, about £150, Clinical Cases; (*i*) Percival yn Scholarship, about £75, Surgery; (*j*) Filliter ibition, £30, Pathology; (*k*) Erichsen Prize, £10 10*s.*, ctical Surgery; (*l*) two Senior and two Junior lowes Clinical Medals for Clinical Medicine; (*m*) two ton Gold Medals for Clinical Surgery; (*n*) Alexander ice Gold Medal for Pathology and Surgery; and Tuke Silver and Bronze Medals for Pathology. Radcliffe Crocker Travelling Scholarship for matology. (*q*) Leslie Pearce Gould Travelling olarship for Surgery.

he *Museum of Pathological Anatomy* is open for dy daily, and microscopic sections of most of the cimens have been prepared and are available for use of students on application to the Curator. Anatomical Museum of the University of London, iversity College, is open to all students of University lege Hospital and Medical School on the recommdation of the School Committee. The Medical Library, open daily to every student of the School, contains about 20,000 works on medical subjects, including all the current text-books and works of reference required for study or research.

The Medical Society of University College Hospital Medical School exists for the dual purpose (1) of promoting the study of medical and surgical science, and (2) of promoting social intercourse among its members. All male students of the Medical School are required to become members. Meetings are held once a fortnight for the purpose of discussing subjects connected with the study of medicine. In its social aspect the society includes various athletic clubs and superintends the gymnasium and squash racquet court in the Medical School, and the Athletic Ground at Perivale.

University College Hall, Ealing, is recognised by the authorities as a residential hostel. The Students' House in University-street contains large and comfortable rooms. The Maternity Students occupy them on payment of a moderate charge.

Full information can be obtained from the Dean of the School.

WESTMINSTER HOSPITAL.—The Hospital contains 240 beds. By a scheme for the concentration of the teaching of the preliminary and intermediate subjects of the curriculum, which has the support of the London University, an arrangement has been made by the Westminster School for the teaching of these subjects at King's College. Students, however, may join the Westminster Medical School as formerly and may compete for Entrance Scholarships as heretofore. There are separate departments for Diseases of the Eye, Skin, Teeth, Ear, Nose, and Throat, for Orthopædic practice, for Diseases of Women, for Diseases of Children, for Radiography, for Venereal Diseases, and for Massage, Electrical and Light Treatment. The Anatomical, Pathological, and Materia Medica Museums are open to all students of the school.

The usual registrarships and house appointments are open to students.

Scholarships and Prizes.—The following Entrance Scholarships are offered for competition: Winter Session: Two Scholarships in Anatomy and Physiology, £75 each. Summer Session: Two Scholarships in Anatomy and Physiology, £75 each. A certain number of Scholarships have been allotted to Universities of England, Wales, and the Colonies, and to Public Schools. These Scholarships are awarded entirely on the nomination of the principal of the university or school. During the period of study the following prizes may be competed for: Sturges Prize in Clinical Medicine, about £6, Reports on Cases; Clinical Surgery Prize, £5, Reports on Cases; Chadwick Prize, £21 in books or instruments—Medicine and Surgery, including Pathology and Applied Anatomy and Physiology; Frederic Bird Medal and Prize, open to Fourth-year Students, £14 in medal and books or instruments—Midwifery, Diseases of Women, Medicine, Pathology, Forensic Medicine and Bacteriology, and Public Health and Toxicology; Abrahams Prize in Clinical Pathology, 5 guineas, a Paper and Tests in Practical Work; Alfred Hughes Memorial Prize, open to Second-year Students, about £5 in books or instruments—Anatomy; Huxley Memorial Prize, 3 guineas in books or cash, open to Second-year Students—Physiology; Carter Gold Medal and Prize for Botany, open to Students of not more than three years' attendance, gold medal and books of the joint value of £15; Jelf Medal awarded to Third-year Students; Second-year Scholarship £20, Elementary Anatomy, Physiology, Histology, and Organic Chemistry; Daniell Scholarship, £40, Chemistry; Rabbeth Scholarships open to First-year Students, one of £30 and one of £15; Class Examinations in the Preliminary Scientific Course.

The Athletic Grounds are situated in Tooting and are reached in 20 minutes from the hospital.

Inquiries should be addressed to the Dean of the Medical School.

ROYAL FREE HOSPITAL, LONDON: SCHOOL OF MEDICINE FOR WOMEN.—The Royal Free Hospital contains 268 beds. The Hospital also has large Casualty and Out-patient Departments, and Departments for Special Diseases. A new and specially equipped block contains the Obstetrical and Gynæcological Unit, which controls 68 beds. A Children's Department, including 18 cots, an Orthopædic Department, and a Light Department have recently been added to the Hospital. Maternity Districts are attached to the Unit operating in the Gray's Inn-road and Essex-road areas. Students also attend the in-patient and out-patient practice of the Elizabeth Garrett Anderson Hospital, Cancer Hospital, Hospital for Sick Children, Great Ormond-street, National Hospital for Paralysed and Epileptic, South London Hospital, and Royal London Ophthalmic Hospital.

A Clinical Unit in Obstetrics has been established. Courses are arranged for the Primary Fellowship Examination of the College of Surgeons; also for dental students in conjunction with the Royal London Dental Hospital, Leicester-square.

The School buildings have been entirely rebuilt in recent years, and there are spacious, well-equipped laboratories, which afford every facility for efficiency of teaching and practical work in all departments.

There are residential chambers at 8, Hunter-street, 25, Gordon-square, 9 and 16, Brunswick-square, 5, Mecklenburgh-square, and 36, Tavistock-square, and the Warden can be consulted on the subject of other residences for students.

Students after qualification can hold the posts of house physicians, house surgeons, obstetric assistants, clinical assistants, assistant anæsthetist, medical, gynæcological, and surgical registrars, and assistant pathologist; and at the Medical School the posts of demonstrators in the departments of Anatomy, Physiology, Pharmacology, Biology, Chemistry, and Physics. Many other resident posts in London and elsewhere are also open to them.

Scholarships and Prizes.—(*a*) Isabel Thorne Scholarship, £30. (*b*) St. Dunstan's Medical Exhibition, £60 a year, tenable for three or five years. (*c*) Mrs. George M. Smith Scholarship, £50 a year, tenable for three or five years. (*d*) Bostock Scholarship, tenable for two or four years, £90 (*e*) Mabel Sharman-Crawford Scholarship, tenable for four years, £20 a year. (*f*) Sir Owen Roberts Scholarship, £75 a year for four years. (*g*) Mabel Webb Research Scholarship, tenable for one year and renewable, £30, Physiology, Chemistry, or Pathology. (*h*) Fanny Butler Scholarship, tenable for four years; next award in July, 1931, £16. (*i*) John Byron Bursary, tenable for two years, for students already in the School requiring assistance for the prosecution of their medical studies; application to the Secretary by March 31st next, £20. (*k*) Helen Prideaux Prize and Julia Ann H. Cock Prize, awarded alternately every year to a student who has become qualified during the two years immediately preceding the award, and to be spent in assisting the holder to further study, £60 each. (*l*) Dr. Edith Pechey Phipson Post-graduate Scholarship of the value of £100, awarded annually in June. It is open to all medical women, preferably coming from India, or going to work in India, for assistance in Post-graduate study. (*m*) Sarah Holborn Scholarship, value £20 a year for three or five years, awarded every alternate year; next award in 1929. (*n*) Dr. Margaret Todd Scholarship, tenable for four years, £37 10*s*. a year, awarded in alternate years; next award in July, 1929. (*o*) Lieutenant Edmund Lewis and Lieutenant Alan Lewis Memorial Scholarship, tenable for four years, awarded every four years; next award in July, 1928. (*p*) Alfred Langton Scholarships, tenable two years, one awarded annually, £50 a year. (*q*) School Jubilee Bursary, tenable for three years, £50 a year. (*r*) Flora Murray Bursary, awarded every year to a fifth-year student, £50. The Dorothy Chick Gift, £20, is awarded annually for efficiency in Practical Midwifery. Two Richardson-Kuhlmann Prizes are given each year, value £12, for proficiency in Clini Obstetrics, value £8, for proficiency in senior subje respectively. Two Evans Prizes of £2 2*s*. and £1 1*s*. given each year on the results of the class examinat in Midwifery. The Evans Prize for Operative M wifery, value £5 5*s*.; the Dr. Helen Webb Prize Children's Diseases, £5 5*s*.; the Mary Swann Prize Gynæcology, £5 5*s*.; the Edward Hanson Prize Physiology, £2 10*s*.; and the Edith Pechey Phip Prize in Pharmacology, value £3 3*s*., are awar annually.

The Students' Union arranges the social, athle and other clubs and societies. The School spo ground, consisting of 7½ acres of freehold land, situated at Sudbury (easily reached from Eus Station).

Inquiries may be addressed to the Warden Secretary of the Medical School, 8, Hunter-str London, W.C.

UNIVERSITY OF DURHAM.

The University of Durham grants degrees Bachelor of Medicine, Bachelor of Surgery, Doc of Medicine, Master of Surgery, Doctor of Surge Bachelor of Hygiene, Doctor of Hygiene, Bach of Dental Surgery and Master of Dental Surge the Diploma in Public Health, Diploma in Psychia and a Licence in Dental Surgery.

For the degrees of *Bachelor of Medicine* and *Bach of Surgery* there are four professional examinatio The subjects of the First Examination are—Elem tary Biology and Organic Chemistry. The subj of the Second Examination are—Anatomy Physiology. The subjects of the Third Exami tion are—Materia Medica, Pharmacology, gen principles of Therapeutics and Pharmacy, Med Jurisprudence, Public Health, and Pathology Bacteriology. The subjects of the Fourth Exam tion are—Medicine, Clinical Medicine, Surg Clinical Surgery, Operative Surgery, Midwifery Gynæcology, Psychological Medicine, Diseases of Skin, of the Throat, Nose, and Ear, and of Child and Ophthalmology. It is required that at least on the five years of professional education shall be sp at the University of Durham College of Medic Newcastle-upon-Tyne.

For the degrees of *Doctor of Medicine* and *Maste Surgery* a candidate must not be less than 24 y of age. He must also have obtained the degree Bachelor of Medicine and Surgery of the Univer of Durham, and must have been engaged for at l two years subsequently to the date of admissio these degrees in research work, or in attendance the practice of a recognised hospital, or in the n or military services, or in medical or surgical prac The candidate for the M.D. degree may present essay or undergo a special examination in the subj of Medical Anatomy, Medical Pathology, and Principles and Practice of Medicine. The subject examination for the M.S. are:—Principles Practice of Surgery, Surgical Pathology, Surg Anatomy, Surgical Operations, Clinical Surgery.

Doctor of Medicine (without residence).—The versity of Durham has instituted a special exam tion whereby the degree of Doctor of Medicine ma obtained without residence. Candidates must no under 40 years of age and must have been in ac practice for 15 years as registered medical p titioners. They must also produce certificate moral character from three registered member the medical profession. The fee is 50 guineas (inc ing the degree fee), of which 20 guineas is retain the candidate fails to satisfy the examiners.

Doctor of Surgery.—The University of Dur grants the Degree of Doctor of Surgery. Candid for this degree must be registered medical p titioners, and not less than 24 years of age. must devote three years, subsequently to obtai a registrable qualification, to the study of Sur and ancillary subjects. One at least of the t years must be spent in the University. The ca

must submit to the Professor of Surgery the se of study he proposes to follow, and this course t be approved by the Board of the Faculty of icine. One year shall be devoted mainly to work he departments of Anatomy, Physiology, Patho-, and Bacteriology, and the candidate must nit evidence of having so worked. Not less than nonths of another year must be spent as resident eon in a recognised teaching hospital, and the of the year in the study of surgery in a recog-d medical centre. Not less than six months of of the three years must be spent in surgical study ad.

ndidates for any of the above degrees, diplomas, cence must give at least 28 days' notice to the etary of Examinations, University of Durham ge of Medicine, Newcastle-upon-Tyne. In the of the M.D. (essay) examination candidates t send in their essays before April 1st.

cholarships and Prizes.—The following are rded :—University of Durham Entrance Scholar-, £25 a year for four years; Pears' Entrance larship, £40 a year for three years (awarded y third year; Heath Entrance Scholarship (from ier Grammar School), £60 (renewable); Province Durham Masonic (Entrance) Scholarship, £60 ewable); Heath Scholarship for Surgery, £200, lable every second year; Rutherford Morison ical Scholarship, £180, available every third year. ne following Scholarships are tenable for one year, ely :—Tulloch Scholarship for Elementary Biology Organic Chemistry, £20; Dickinson Scholarship Medicine, Surgery, Midwifery, and Pathology; t Medal and £20; Charlton Scholarship for Medi-, £25; Gibb Scholarship for Pathology, £28; e Armstrong Scholarship for Comparative Patho-, £25; Stephen Scott Scholarship for Surgery, ; Philipson Scholarships for highest marks in l M.B., B.S. Examinations, two of £48 each; der Memorial Scholarship for Clinical Medicine Clinical Surgery, interest on £325; Gibson Prize Midwifery and Diseases of Women and Children, ; Turnbull Prize and Silver Medal for Surface tomy; and Outterson Wood Prize for Psycho-al Medicine, £10; Sewell Memorial Prize and r Medal for Clinical Pathology.

or further information apply to the Dean of College.

OLLEGE OF MEDICINE, Newcastle-upon-Tyne.—pital practice is carried out at the Royal Victoria mary, a general hospital containing more than beds, and there are facilities for the study of the ous special subjects.

actical midwifery can be studied at the Princess y Maternity Hospital, which contains 90 beds, an annual indoor and outdoor attendance on cases.

ne bacteriological laboratory is adjacent to Arm-g College.

Students' Union has been erected and furnished cost of over £54,000, and is now in daily use. ial accommodation has been provided for women ents.

EWCASTLE-UPON-TYNE ROYAL VICTORIA INFIR-Y.—The Infirmary has 572 beds. Clinical ures are delivered by the Physicians and Surgeons dly and ward demonstrations are given daily. rial classes are held by specially appointed ical Tutors, Assistant Surgeons and Senior stant in the Gynæcological Department, and onstrations are given in the several out-patient rtments daily. Pathological demonstrations are n by the Pathologist daily or as opportunity rs, and in the new buildings nothing has been ed in perfecting scientific equipment. In addition nedical and surgical in-patient and out-patient rtments the following special departments are equipped for teaching students: Ophthalmic, at, Nose, and Ear, Skin, Gynæcological, and Elec-l. The hospital building contains the following laboratories: 1. Special Pathological Laboratory, attached to the post-mortem rooms. 2. Bacteriological Laboratory in which all clinical bacteriological investigations are carried out with a view to treatment by vaccines and serums. 3. There is in addition a Clinical Laboratory attached to each ward and to the out-patient department. There are five operating theatres in use in the hospital. The winter session of 1928 opens on Oct. 2nd and the summer session of 1929 on April 11th.

Applications for detailed information should be made to the Sub-Dean, Dr. Horsley Drummond, at the hospital.

Practical Midwifery is studied at the Princess Mary Maternity Hospital, a new building, excellently equipped, with 90 beds. Instruction is given in Psychological Medicine at the City of Newcastle Mental Hospital. A special course of instruction is given in the City Hospital for Infectious Diseases by the City Officer of Health. Ophthalmology is taught at the Northumberland, Durham, and Newcastle Infirmary for Diseases of the Eye.

Post-graduate Instruction.—1. General courses in Clinical Medicine, Surgery, and Pathology at the Royal Victoria Infirmary, meeting once weekly for ten weeks. One course will be held from October to December and one from April to June. 2. Special courses of clinical instruction, meeting once weekly for ten weeks, in the following subjects: Gynæcology; Diseases of the Eye; Diseases of the Throat, Nose, and Ear; Diseases of the Skin; Venereal Diseases; Neurology; Diseases of Children; Electrotherapeutics and Radiology; special courses in Midwifery will be held at the Princess Mary Maternity Hospital. 3. An intensive course of 14 days' duration in the early part of the Summer Vacation. 4. In addition to the regular post-graduate courses practitioners may attend the ordinary medical and surgical practice of the Royal Victoria Infirmary, and also at the Princess Mary Maternity Hospital, for specified periods.

UNIVERSITY OF BIRMINGHAM.

The University of Birmingham grants the degrees of M.B., Ch.B., M.D., Ch.M., and Ph.D. (for Research Study), and also a degree and a diploma in Public Health. The course for the Bachelors' degrees extends over five years from the date of commencement of professional study. As a rule the first four of these years must be spent in the University, but the Senate has power of recognising attendance at another University as part of the attendance qualifying for these degrees and of recognising examinations passed at such other Universities as exempting from the examinations in Biology and Organic Chemistry. In the case of such students at least three years must be spent in attendance upon classes at the University. The fifth year may be spent at any other medical school recognised by the University.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—The student must have passed the Matriculation Examination of the Joint Board or an examination accepted in lieu thereof, and a recognised Pre-Medical Examination in Chemistry and Physics. All communications respecting the Matriculation Examination, and examinations accepted in lieu thereof, must be sent to the Secretary, Joint Matriculation Board, 315, Oxford-road, Manchester. First Examination.—Part I., Elementary Biology and Organic Chemistry; Part II., Anatomy and Physiology. Second Examination.—General Pathology and Bacteriology, Materia Medica, and Pharmacy. Third Examinations (at the end of the fourth year).—Forensic Medicine, Toxicology, Public Health, and Therapeutics. Two years' hospital work must have been accomplished. Final Examination.—Medicine, Surgery, Midwifery, Diseases of Women, Mental Diseases, and Ophthalmology. Attendance at a general hospital for a year after the passing of the third examination will be required, also attendance at a fever hospital three months, maternity hospital three months, and mental hospital three months.

Vaccination instruction must be taken and courses of Ophthalmology, Venereal and Skin Diseases, and Diseases of Ear, Nose, and Throat, Medical and Surgical Anatomy, and Operative Surgery. Distinctions may be awarded in the subjects (severally) of the First, Second, Third, and Final, and Honours in the Final Examination.

Degrees of Doctor of Medicine and Master of Surgery. At the end of one year from the date of having passed the final M.B., Ch.B. examination the candidate will be eligible to present himself for the higher degrees of either Doctor of Medicine or Master of Surgery or both. Candidates have to present a thesis on some subject embraced in the medical curriculum, and pass a general examination in Principles and Practice of Medicine for the M.D., and one in Principles and Practice of Surgery, including operations on the cadaver, for the Ch.M., or, at the discretion of the examiners, in a special branch of Medicine or Surgery respectively. A thesis of exceptional merit may exempt from any part of these examinations, in which Honours may be awarded.

Degree of Ph.D.—The Degree of Doctor of Philosophy is conferred upon candidates who possess a medical degree of a British, Colonial, or other university approved of by the Senate of the University, and who have been engaged, to the satisfaction of the Medical Faculty, in advanced study and research for a period of not less than two years, either in a laboratory of the University or in one or more of the hospitals associated with the University. After the first year candidates may carry on research elsewhere, under approved conditions, and on completing the course present a thesis and submit themselves for oral and possibly written examination.

Scholarships and Prizes.—The following are awarded:—(*a*) Myers Travelling Studentship of £300, tenable for one year, offered in alternate years, awarded by vote of committee to M.B., Ch.B. candidates, tenable at some University or Hospital not in Great Britain or Ireland (available for year 1928–29); (*b*) two Ingleby Scholarships of £10 each awarded to the candidate at Final Examination obtaining highest "first-class" marks in the subjects of Midwifery and Diseases of Women; (*c*) Sydenham Scholarship of £42, tenable for three years, award of Council to orphan sons of medical practitioners; (*d*) Sands Cox Scholarship of £21 per annum during two years, awarded to the candidate, not being more than 19 years of age, taking the highest marks at the Higher School Certificate Examination of the Joint Matriculation Board; (*e*) Dental Scholarship of £37 10*s*., Open Competitive Examination in subjects learned during apprenticeship; (*f*), (*g*), (*h*), and (*i*) Four Queen's Scholarships of £10 10*s*. each. In the First and Third Examinations the Scholarship is awarded respectively to the student taking the first place. In the Second Examination the Scholarship is awarded to the student obtaining the highest marks in Pathology and Bacteriology, provided that such student passes at the same examination in the subjects of Materia Medica and Practical Pharmacy. In the Final Examination the Scholarship is awarded to the candidate taking the first place in the examination and whose work is regarded as sufficiently distinguished of the total available marks; (*j*) George Henry Marshall Scholarship of £10, awarded annually, for the encouragement of Research Work in Ophthalmology; and (*k*) Russell Memorial Prize, a prize of books, value about £2, awarded annually to the student who, not being of more than six years' standing as a student of the School of Medicine of the University, shall pass the best examination in the subject of Nervous Diseases. The "Arthur Foxwell Memorial Medal" (Gold Medal for Medicine) and the "Sampson Gamgee Memorial Medal" (Gold Medal for Surgery) are awarded annually to the best candidates passing Final M.B., Ch.B. Examination in June in Medicine and Surgery respectively, provided that not less than 60 per cent. of marks is obtained (paper, oral, and clinical). The University Clinical Board awards Gold and Silver Medals on examinations in Medicine, Surgery, and Midwifery, res tively, in fourth and fifth years, open to all stude

Clinical Instruction.—The medical students of University receive their clinical instruction by att ing the amalgamated practice of the General Hosp Queen's Hospital, Maternity Hospital, Childr Hospital, Mental Hospital, and Fevers Hospital, u the direction of the University Clinical Bo Appointments are open to students varying £40 to £200 a year.

Post-graduate Instruction.—A "William Withe Lectureship" has been established. A course courses) of lectures is given annually for post-gradu on subjects chosen from year to year. In 1929 Lectures will be given by Dr. Charles Singer. Ingleby Lectures on some subject in connexion Diseases of Women and Children are given annu by specially appointed lecturers. Post-grad Courses of Clinical Demonstrations for General P titioners are arranged annually (April to July) at Birmingham General and Queen's Hospitals.

QUEEN'S HOSPITAL.—350 beds. There is a association of this Hospital with the Universit Birmingham, and the University clinical teachin conducted here, there being a wealth of excel material. Ward rounds and out-patient clinic cla are held daily, and there are regular tutorial cla throughout the session. Post-graduate cou arranged by the University are conducted every y There are special departments in Gynæcology, Dise of the Eye, of the Ear, Nose and Throat, Dentis Radiography, Pathology, Bacteriology, Biochemis Physiotherapy, and Electrocardiography. There also large Wards for Midwifery and Postnatal c a Nursery for instruction in Infant Welfare, extensive Midwifery District, and residential facil for students. There are 23 Resident Appointm (exclusive of Registrars) available each year recently qualified students.

BIRMINGHAM GENERAL HOSPITAL.—399 Special wards for Children, Gynæcological, Ear Throat, Venereal, Maternity, and Septic ca special beds for Eye and Skin cases. Laborat for Bacteriology and Morbid Histology. Sep rooms adjoin the medical and surgical wards clinical pathology. Five operating theatres (on out-patients), all designed and fitted on mo lines. In addition to clinical teaching given in wards and out-patient department by the hon staff, medical and surgical tutorial classes are for senior and junior students. Clinical instru in all the special departments, which include for Radium, Electrotherapy, Electrocardiogr investigation, and Venereal Diseases. Post-gra classes in every branch of medicine and sur The Jaffray Branch Hospital contains 61 beds.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Ch street, Birmingham.—115 beds. Students attendi a period of three months will be granted certif which will qualify for the University and Co Board examinations. Post-graduate courses available on various subjects, when a suff number of graduates are present. A limited nu of Non-Resident Clinical Assistants posts are ava to qualified practitioners, particulars of which c had on application to the General Superinten A fully equipped Ultra-Violet Ray Clinic and P logical Department have been opened this year.

UNIVERSITY OF LIVERPOOL.

The degrees in the Faculty of Medicine are Ba of Medicine and Bachelor of Surgery (M.B. and C Doctor of Medicine (M.D.), Doctor in Philo (Ph.D.), Master of Surgery (Ch.M.), Mast Hygiene (M.H.), and Master of Orthopædic S (M.Ch.Orth.).

Matriculation.—Important alterations in reg Matriculation requirements and to the Firs Second Years' courses of study will come operation in October, 1929. Particulars m obtained on application to the Dean.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—Candidates for the degrees of Bachelor of dicine and of Surgery must have attained age of 22 years on the day of graduation. At st two of the five years of medical study must e been passed in the University, and one year least must have been passed in the University sequently to the date of passing the First amination. The other three years may be passed any college or medical school recognised for s purpose by the University. Candidates must s three examinations entitled respectively: First Examination, the Second Examination, l the Final Examination. The subjects of First Examination are: (1) Chemistry; (2) ysics; (3) Biology (Zoology and Botany). The jects of the Second Examination are (*a*) (1) atomy; (2) Physiology (including Physiological emistry and Histology); and (*b*) (3) Elementary cteriology, (4) Clinical Chemistry, (5) General thology. Candidates may present themselves in or (*b*) separately. The subjects for the Final amination are: (*a*) (1) Special Pathology and rbid Anatomy; (2) Forensic Medicine and Toxi-ogy; (3) Public Health; (4) Pharmacology and neral Therapeutics; (*b*) (5) Obstetrics and Diseases Women; (6) Surgery, Systematic, Clinical, erative and Practical, including Ophthalmology; Medicine, Systematic and Clinical, including Thera-itics, Mental Diseases, and Diseases of Children. ndidates may present themselves in Parts (*a*) and separately, but candidates must have completed fifth year of medical study before taking t (*b*).

Degrees of Doctor of Medicine and Master of Surgery. candidate will be admitted to the degree of ctor of Medicine or Master of Surgery unless he previously received the Degrees of Bachelor of dicine and Bachelor of Surgery, and at least two rs have elapsed since he passed the examinations those degrees. Candidates for the degree of Doctor Medicine are required to present a thesis together h, if desired, published original work relative to lical science, and unless the thesis is of special it to submit to an examination in medicine, or a special written or oral examination on subjects nected with the thesis.

The University also awards a *Diploma in Medical Biology and Electrology*—Part I., Physics: Part II., Biology and Electrology. The parts may be taken one examination or separately.

Scholarships, Fellowships, and Prizes.—The follow-are awarded: (*a*) Robert Gee Entrance Scholar-p (Men), annually, of £42 10s., tenable for four rs; (*b*) Lyon Jones Scholarship, No. 1, of per annum, tenable for two years, Com-itive Examination among Junior Students in st M.B. Subjects; (*c*) Lyon Jones Scholar-p, No. 2, of £21, Competitive Examination on ults of Professional Examination in Anatomy, siology, Elementary Bacteriology, Clinical Chem-y, and General Pathology; (*d*) Derby Exhibition £15, Competitive Examination among Fourth-Fifth-year Students in Clinical Subjects, and (*e*) ical School Exhibition of £15 annually for Fourth-Fifth-year students; (*f*) University Scholarship £50 for one year, awarded on results of the Final rt A) Examination for the degrees; (*g*) Holt Fellow-ps, Physiology and Pathology, of £150 each, for one r; (*h*) Gee Fellowship, Anatomy, of £100, for year; (*i*) John Rankin Fellowships in Anatomy, , each of the value of £120, tenable for two years; Johnston Colonial Fellowship, Biochemistry, £100, for one year; (*k*) John W. Garrett Inter-ional Fellowship, Bacteriology, of £100, for one r; (*l*) Thelwall Thomas Fellowship, Surgical hology, of £150, for one year; (*m*) Ethel Boyce lowship in Gynæcological Pathology, of £100 for year; (*n*) Mary Birrell Davies Memorial Fund olarship, of the value of £60, tenable for four years, red for competition in alternate years; open only women students who will have attained the age of 19 on the first day of October next following the award; (*o*) Rankin Exhibition in Practical Anatomy, of £25, for one year; (*p*) Lady Jones Research Fellowship in Orthopædic Surgery, £200; (*q*) Samuels Memorial Scholarships, three at £20; numerous prizes and medals.

The Medical School.—All the laboratories and class-rooms are situated close together, communicating with one another, and are made up of four large blocks of buildings which form one side of the College quadrangle. There are the Johnston Laboratories for Experimental Medicine and Biochemistry; the Medical School for Anatomy, Surgery, Toxicology, and Ophthalmology; and the Thompson-Yates Laboratories for Physiology and Pathology. There is also a separate building for Tropical Medicine. Medical research has also been endowed with several new laboratories in which students can pursue research work after graduation.

Clinical Studies.—The Clinical School of the University consists of four general hospitals—the ROYAL INFIRMARY, the DAVID LEWIS NORTHERN HOSPITAL, the ROYAL SOUTHERN HOSPITAL, and the STANLEY HOSPITAL; and of six special hospitals—the Eye and Ear Infirmary, the Hospital for Women (with the Samaritan Hospital), Liverpool Maternity Hospital, the Royal Liverpool Children's Hospital, St. Paul's Eye Hospital, and St. George's Hospital for Skin Diseases. These hospitals contain in all a total of about 1445 beds. The organisation of these hospitals to form one teaching institution provides the medical student and the medical practitioner with a field for clinical education and study which is unrivalled in extent in the United Kingdom. All the hospitals are within easy access of the University. There are a large number of appointments to house physicianships and surgeonships both at the general and special hospitals which are open to qualified students of the school.

Public Health Department.—This is located in a separate building, in which full courses of instruction are given to students for the Diplomas and Degrees of the University and of other Examining Boards.

Prospectuses and further information may be had on application to the Dean of the Faculty of Medicine, University of Liverpool.

VICTORIA UNIVERSITY OF MANCHESTER.

Four degrees in Medicine and Surgery are conferred by the University—viz., Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). A Diploma in Psychological Medicine, a Diploma in Public Health, and a Diploma in Bacteriology are awarded by examination to registered medical practitioners.

***Degrees of Bachelor of Medicine and Bachelor of Surgery.*—Before admission to the degree of M.B. or Ch.B. candidates are required to present certificates that they will have attained the age of 21 years on the day of graduation, and that they have pursued the courses of study required by the University Regulations during a period of not less than five and a half years subsequently to the date of their registration by the General Medical Council, two of such years having been passed in the University subsequently to the date of passing the first M.B. Examination.**

The First Examination: (1) Chemistry and Physics; (2) (*a*) Botany, (*b*) Zoology. Candidates must have attended during at least six months' courses both of lectures and of laboratory work in each of the above-named subjects. The Examination is divided into two parts: Part I, Inorganic and Elementary Organic Chemistry and Physics; Part 2, (*a*) Botany, (*b*) Zoology. The candidates sit for these parts separately. The Second Examination: (1) Anatomy and Histology; (2) Physiology, including Physiological Chemistry. The Third Examination: (1) Pharmacology and Materia Medica; (2) Pathology. The Final Examination: (1) Medicine, Systematic and Clinical (including Mental Diseases and Diseases

of Children); (2) Surgery, Systematic, Clinical, and Practical; (3) Obstetrics and Gynæcology (including Clinical and Practical); (4) Forensic Medicine (including an Oral Examination); (5) Hygiene and Preventive Medicine. The Final Examination is divided into two parts: Part I., Forensic Medicine, Hygiene and Preventive Medicine; Part II., Medicine, Surgery, Obstetrics and Gynæcology (Systematic, Clinical, and Oral). Candidates for the Second Part must have completed the sixth year of medical study.

Degree of Doctor of Medicine.—Candidates are not eligible for the degree of Doctor of Medicine unless they have previously obtained the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees. Candidates may elect either (1) to present an original dissertation; or (2) to undergo an examination. The dissertation must embody the results of personal observation or original research, either in some department of medicine or of some science directly relative to medicine. The examination, which will be written and practical, is in the Principles and Practice of Medicine, in Pathology, and in some other subject to be selected by the candidate.

Degree of Master of Surgery.—Candidates are not eligible for the degree of Master of Surgery unless they have previously obtained the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees. The degree is conferred in the following branches: Surgery (Branch I.), Gynæcology (Branch II.), Ophthalmology (Branch III.), Laryngology, Otology, and Rhinology (Branch IV.).

Degrees of B.Sc. and M.Sc.—The ordinary degree of B.Sc. in the Schools of Anatomy and Physiology may be obtained by students in Medicine who in their third year of study for the degree of M.B., Ch.B. complete the additional courses in these subjects prescribed for this degree. Candidates for the Honours degree of B.Sc. in Anatomy or Physiology, who are students in Medicine, are required to attend courses in advanced Anatomy and Physiology for four terms after passing the Second Examination for the degrees of M.B., Ch.B. Graduates in science may proceed to the degree of M.Sc. by presentation of an approved thesis.

Scholarships, Fellowships, and Prizes.—The following are offered in connexion with medical study at the Victoria University:—Scholarships: Dreschfeld Entrance (triennial), £20; John Russell Medical Entrance, £45; Sam Gamble Entrance for Women; Graduate Entrance (fees up to 160 guineas); two Dauntesey Medical Junior, £50 each; Dauntesey Medical Senior, £50; Professor Tom Jones Exhibition in Anatomy, £25; Dickenson Trust Scholarships in Anatomy and Pathology; Platt Physiological, £90; Graduate Research Scholarship, £70; Dickenson Trust Travelling Scholarships in Medicine and Surgery; Ashby Memorial in Diseases of Children (triennial), £100; John Henry Agnew in Diseases of Children, £120. Fellowships: Leech Research, £70; Professor Tom Jones, Surgical, £105; Morrison Watson in Anatomy, £150; Delépine in Preventive Medicine (biennial), £300; Honorary Research Fellowships. Prizes: Sidney Renshaw in Physiology, £15; Turner Medical, £20; Dumville Surgical, £15; Knight Prize in Psychological Medicine, £50; Graduate Prizes, £5 each. There are many general entrance scholarships, in addition to those already mentioned, open for competition, the examinations for which are held in the month of May. Full particulars can be obtained from the Registrar.

The Medical School.—This school, largely extended in 1920, is provided with dissecting-rooms, X ray rooms, physiological laboratories, private laboratories, and work-rooms, besides lecture-rooms, museums, and general and departmental libraries. A special laboratory is equipped for experimental work on the central nervous system. In the pathological laboratories ample provision is made for the teaching of pathology and bacteriology and for the prosecution of original research. The Helen Swindells Laboratory is specially equipped for cancer research and investigation in general pathology. Ample facilities investigation are provided in Anatomy, Physiolo and Materia Medica. In the public health depa ment, which is lodged in a separate institute in Y Place, near the Royal Infirmary, suitable laborat accommodation is provided for the study of sanit chemistry, physics, and practical bacteriology in departments of chemistry and physics and in t of pathology.

Clinical Studies.—The clinical and practical depa ments of medical study are taught partly in Medical School and partly in the Royal Infirm and St. Mary's Hospitals for Women and Childr a fever hospital, mental hospitals, a convalesc home, and other special hospitals. Medical a Surgical Clinical Classes are conducted in the Infirma and separate instruction is afforded in the element Medical and Surgical Physical Diagnosis, in Obstet Medicine, Ophthalmic Surgery, and Pathologi Anatomy by the different members of the staff of Medical School and Infirmary.

Post-graduate Studies.—Post-graduate Courses Medicine and Surgery have been arranged for dur 1928–29 as follows, in addition to those usually h at the various hospitals: 1. Whole-time intens courses in (*a*) Medicine and Surgery, and (*b*) Obstet and Gynæcology. 2. Part-time courses in (*a*) Disea of the Eye, (*b*) Application of Radiology to Medic in Diagnosis and Treatment, (*c*) Diseases of the Sk (*d*) Clinical Pathology. 3. Clinical Assistantsh Syllabuses and other information may be had application to the Dean of the Medical Sch Manchester University.

MANCHESTER ROYAL INFIRMARY.—The M chester Royal Infirmary is built on the pavi system, near the University, and has accommo tion for 668 patients (including 54 beds at Central Branch). The medical side consists of f units, each unit having a testing-room for the scien investigation of morbid products and a class-ro The surgical beds are also arranged in five un each unit having its own operation theatre, v anæsthetising, recovery, sterilising, testing apparatus rooms, and its own class-room attacl All of these units are occupied. In the educati block is a large lecture theatre and a museum. In same building is housed the X ray department, wh has nine separate X ray outfits for different purpo and in which one large room is put aside speci for X ray demonstrations and teaching purpo A large massage school is also connected with department.

Associated with the Infirmary are: (1) the C valescent Hospital at Cheadle, containing 132 b (2) the Royal Lunatic Hospital at Cheadle, acc modating with its branches 430 patients; and (3) Central Branch in the City, which has now acc modation for 54 patients. The Associated Hosp thus contain 1230 beds and are under the s management. Women students are admitted on same terms as men.

Two Entrance Scholarships in Medicine of the v of £160 each are offered annually by the Counc the Manchester University and the Medical B of the Manchester Royal Infirmary for profici in Arts and Science subjects respectively. C scholarships and prizes are mentioned in the Co syllabus. Numerous annual appointments and ju appointments may be held by those who have atte the practice of the Infirmary.

ROYAL MANCHESTER CHILDREN'S HOSPITAL, Pe bury, Gartside-street, Manchester, and Lyt St. Anne's.—The hospital contains 190 beds an in the Convalescent Home, Lytham St. Anne's. medical staff visit the hospital daily at 10 Clinical instruction is given by the medical at the Hospital and Dispensary. There is a Massage and Electrotherapeutic Department, an Artificial Sunlight Department. Four Cli Assistants are appointed for periods of months. In throwing open these appointm

qualified medical men and women, the Board ıctuated by the desire to aid those qualified lical men and women who wish to have oppor- ıties for the further study of disease in dren, or who wish to fit themselves for posts as lical Officers to Children's Hospitals, to Child fare Centres, or for School Medical Officer ointments. There is an Orthopædic Department. -patients' day is on Tuesday at Gartside-street, a ward at Pendlebury is devoted to cases needing ative treatment. Out-patients are seen daily at M. at the Out-patient Department, Gartside-street, ıchester. Secretary: Mr. W. M. Humphry.

ANCHESTER NORTHERN HOSPITAL FOR WOMEN CHILDREN, Park-place, Cheetham Hill-road, ıchester.—The hospital contains 73 beds. Out- ents are seen daily from 8.30 to 12 noon.

UNIVERSITY OF LEEDS.

our degrees in Medicine and Surgery are con- ed—viz.: Bachelor of Medicine and Bachelor of gery (M.B. and Ch.B.), Doctor of Medicine (M.D.), ter of Surgery (Ch.M.), also Degrees and Diplomas Dental Surgery and Diplomas in Public Health in Psychological Medicine. The courses and rees in the Faculty are open to men and women e.

egrees of Bachelor of Medicine and Bachelor of gery.—Candidates for these degrees are required resent certificates showing that they will have ined the age of 21 years on the day of graduation, have attended courses approved by the University nding over not less than five years, two of such s at least having been passed in the University, of which must be subsequent to the date of ing the First Examination. Candidates must also sfy the examiners in the several subjects of the owing examinations, entitled respectively: the riculation Examination, or such other examination nay have been recognised by the Joint Matricula- Board in its stead; the First Examination; the nd Examination; and the Final Examination. First Examination consists of: Part I., Physics Inorganic Chemistry; Part II., Zoology and any. Candidates will be allowed to pass the two s separately. The Second Examination consists Part I., Organic Chemistry; Part II., Materia lica and Practical Pharmacy; Part III., Anatomy, siology; Part IV., Pharmacology. Candidates be allowed to pass any parts separately, but Part nust be passed before Parts II., III., or IV. The al Examination consists of: Part I., Pathology and teriology; Part II., Medicine, Surgery, Obstetrics, ıæcology, and Clinical Pathology; Part III., ensic Medicine, Public Health, and Therapeutics. t I. may be taken at the end of the second clinical r, and Parts II. and III. may be taken at the end he third clinical year, but not before the completion he fifth year of medical study. If taken separ- y Part II. may be passed before Part III.

egree of Doctor of Medicine and Master of Surgery. andidates are not eligible for the degree of Doctor Medicine or Master of Surgery unless they have viously received the degrees of Bachelor of Medi- and Bachelor of Surgery of the University (or of toria prior to December, 1904) and at least two rs' Hospital Practice or four years' other pro- ional practice for the former, and one year has sed for the latter since they passed the examina- for those degrees. Candidates for the degree of tor of Medicine may present a dissertation and, he dissertation is considered to be of exceptional it, will not be required to pass an examination. first term commences on Oct. 1st. Prospectus be obtained from the Academic Sub-Dean.

ost-graduate work.—Practitioners wishing to attend rmary practice during short periods, or post- duate classes held by members of the clinical f, may do so on application to the Clinical Sub- n, from whom particulars may be obtained.

Clinical Studies.—The clinical studies are pursued mainly at the Leeds General Infirmary, which has accommodation for 630 in-patients, including 88 beds at branch hospitals in the country. Clinical teaching takes place daily in the wards, and Clinical lectures are given in Medicine and Surgery by the Physicians and Surgeons. There are Medical, Surgical, Ophthalmic, Aural, Electrotherapeutic, and Radiographic Departments, in each of which special instruction is imparted to students. Gynæcological and Children's Departments, together with Laryngeal, Venereal, and Skin Clinics, are in operation, and there is a special ward for cases of nutritional disorders of children. Several valuable prizes are given at the end of each session. Numerous appointments at the Infirmary are annually open to students after qualification. Further particulars concerning these, and the scholarships and prizes open to competition, may be obtained from the Dean of the Faculty of Medicine.

In addition to work in the General Infirmary, clinical instruction in obstetrics is given in the Leeds Maternity Hospital and in mental and infectious diseases in the Wakefield (W.R.) Mental Hospital and Leeds City Fever Hospital respectively.

UNIVERSITY OF SHEFFIELD.

The Degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.), Bachelor of Dental Surgery (B.D.S.), and Master of Dental Surgery (M.D.S.). There is also a Diploma of Licentiate in Dental Surgery. The courses and degrees in the Faculty of Medicine are open to men and women alike. Candidates must matriculate in the University or pass such other examination as may be recognised for this purpose by the University and sanctioned by the Joint Matriculation Board, and must pass also the further examination in Chemistry and Physics.

***Degrees of Bachelor of Medicine and Bachelor of Surgery.*—A candidate must have attained the age of 22 years on the day of graduation and have pursued the courses of study required by the University regulations during a period of not less than five years subsequently to the date of his matriculation and the passing of the further examination in Chemistry and Physics, three of such years at least having been passed in the University, one at least being subsequent to the passing of the First Examination. The subjects of the First Examination are Chemistry, Physics, and Biology. The Intermediate B.Sc. Examination in these subjects will, on payment of the required additional fee, be accepted instead of this examination. Candidates must, after matriculation and the passing of the further examination in Physics and Chemistry, and registration as medical students, have attended courses of instruction (lectures and laboratory work) in chemistry, physics, and biology for one year each. The Second Examination: The subjects are Anatomy and Physiology. Candidates must have completed the second year of professional study. The Third Examination: The subjects are Pathology, Pharmacology, Anatomy, and Physiology. Candidates must have completed the Lent Term of the fourth year of professional study. The Final Examination: The subjects of the examination are: Part I., Forensic Medicine and Public Health; Part II., Medicine (including Mental Diseases and Diseases of Children), Surgery, Obstetrics (including Gynæcology). Candidates for Part I. must have completed the Michaelmas Term of the fifth year of professional study; candidates for Part II. must have completed the fifth year of professional study.**

***Degree of Doctor of Medicine.*—Candidates for the degree of Doctor of Medicine must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, must present a thesis embodying observations in some subject approved by the professor of medicine, and must pass an examination in the Principles and Practice of Medicine.**

Degree of Master of Surgery.—Candidates must have taken the M.B., Ch.B. at least one year previously, and must since have held for not less than six months a surgical appointment in a public hospital.

The subjects of examination are Systematic, Clinical, and Operative Surgery, Surgical Anatomy, Surgical Pathology and Bacteriology.

Scholarships and Prizes.—The following are awarded: Four Town Trustees scholarships, offered annually, each of the value of £50 per annum for three years. Medical: offered annually, covers cost of medical curriculum. Six Edgar Allen, offered annually, each of the value of £125 per annum for three years. Post-graduate: Frederick Clifford scholarship, value £50 per annum, tenable for two years. Mechanics' Institute scholarship, value £50 for one year, renewable for a second year. Town Trustees fellowship, value £75 for one year. Medals and Prizes: Kaye scholarship; Gold Medal in Clinical Medicine and Surgery; John Hall Gold Medal in Pathology; Holroyd Gold Medal in Anæsthetics; bronze medals. Particulars of all the above may be obtained from the Registrar.

The Medical School.—The Medical Department occupies the entire north wing of the University quadrangle. The various athletic and other students' societies are under the management of the Union Representative Council, elected annually. There are large and comfortable common rooms both for men and women students, and two Students' Unions, one for men and one for women. A refectory is open daily at the University where students may obtain meals and refreshments at moderate prices. The University journal, *Floreamus*, edited by a committee of staff and students, is published each term. The University Halls, "Oakholme," Clarkehouse-road; "Tapton Cliffe," Fulwood-road, and "Endcliffe University Hall," Endcliffe Vale-road, are recognised by the Senate as halls of residence for women students; full particulars may be obtained from the tutor for women students. Stephenson Hall is a hall of residence for men students; particulars may be obtained from the Warden.

Clinical Studies.—The University is within easy reach of the various hospitals with which it is connected for clinical purposes.

The SHEFFIELD ROYAL INFIRMARY (500 beds) provides all the opportunities of a large general hospital with special departments for Skin and Ear. The Sheffield Royal Hospital, 320 beds, has special out-patient departments for Diseases of the Throat, Ear, Skin, Orthopædics, and Mental Diseases. The two institutions are amalgamated for the purposes of clinical practice, medical, surgical, and special. There are special departments for the treatment of Diseases of the Eye, with wards assigned to them, at both hospitals, and excellent junior appointments. The Jessop Hospital for Diseases of Women, with 142 beds, has also a Maternity department, with about 900 in-patients per annum and about 250 out-patient cases attended. The Children's Hospital has 85 beds. Special courses on Fevers are held at the City Fever Hospitals (690 beds) and on Mental Diseases at the South Yorkshire Mental Hospital (1860 beds). Every facility is afforded in the various laboratories for the prosecution of advanced studies and research.

Post-graduate Courses.—Post-graduate courses of clinical instruction are held annually in the various hospitals connected with the School.

UNIVERSITY OF BRISTOL.

In the Faculty of Medicine there are the following degrees:—Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), Bachelor of Dental Surgery (B.D.S.), and Master of Dental Surgery (M.D.S). There are also the following diplomas: Diploma in Public Health (D.P.H.), Diploma in Dental Surgery (L.D.S.), and Diploma in Veterinary State Medicine.

All candidates for degrees in Medicine, Surgery, and Dentistry are required to pass, at Matriculation standard, an examination called the School Certifi Examination, or to pass such examination as ma regarded as equivalent by the Senate. All cou degrees, and diplomas are open to men and wo alike.

Degrees of Bachelor of Medicine and Bach of Surgery.—Candidates shall be not less t 21 years of age and shall have pursued the cou prescribed by University Regulations during less than five years after passing the first ex nation in Chemistry and Physics, of which three s have been passed in the University, and two of t three subsequent to passing the second examinat All candidates for the degrees of M.B., Ch.B., required to satisfy the examiners in the sev subjects of three examinations. The First Exam tion: The subjects of examination are: Chemi (Inorganic), Physics, and Biology, the courses sued being those for the time being approved the intermediate part of the B.Sc. curriculum. part of the curriculum shall extend over one y (Candidates who have passed the Higher Sc Certificate approved by the Board of Educatio these subjects will not be required to sit for first examination and will be regarded as ha completed one year of study.) The Second Exam tion: The subjects of examination are: Org Chemistry and Elementary Anatomy (Part I.) Advanced Anatomy and Physiology (Part The Final Examination: The subjects of exam tion are: Materia Medica and Pharmacy, Pha cology and Therapeutics, General Pathology, Mc Anatomy, and Bacteriology (Part I.); Special Pa logy, Forensic Medicine, Toxicology, and P Health, Obstetrics (including Diseases of Wom Surgery (Systematic, Clinical, Practical, and O tive), Medicine (Systematic, Clinical, and Prac including Mental Diseases) (Part II.). The sub included in Part II. may be taken in two grou viz., Group I., Surgery and Obstetrics; Group Medicine, Public Health, Special Pathology, For Medicine, and Toxicology. Candidates may Parts I. and II. together, or separately, and the groups of Part II. may be taken together or separa Forensic Medicine and Toxicology may be taken Part I., or with Group II. of Part II.

Degree of Doctor of Medicine.—Candidates sha Bachelors of the University of not less than two y standing as such and may elect either (1) to pa examination in General Medicine, or (2) to pas examination in State Medicine, or (3) to prese Dissertation. The candidate who elects to the examination in State Medicine must a diploma in Public Health of some Unive or College, and the candidate who elects to pr a Dissertation may be examined in the su thereof.

Degree of Master of Surgery.—Candidates sha Bachelors of not less than two years as such, d which period they shall have attended the Su Practice of an institution approved for the pu They shall pass an examination in Surgical Anat Pathology, and Bacteriology, and Operative, Cli and General Surgery, and present to the Univer Dissertation on some subject of Surgery. The d may be taken also in General Surgery, and a S Subject—e.g., Oto-Rhino-Laryngology, Ophth logy, and Gynæcology.

Clinical Studies.—The allied hospitals (BR ROYAL INFIRMARY and BRISTOL GENERAL HOSP have between them about 600 beds and exte out-patient departments, special clinics for Di of Women and Children and those of the Eye, T and Ear, in addition to large and well-equ departments for Dental work and large ou Maternity Departments.

At each of these institutions there are well-arr pathological museums, post-mortem rooms, laboratories for Morbid Anatomy. There are laboratories for work in Clinical Pathology, Bac logy, and Cytology, in which special instruct

n in these subjects. Departments are provided well equipped for X ray work, both for diagnosis treatment, the various forms of Electrical tment, including High-frequency Currents, tric Baths, Finsen Light treatment, and Massage.

he students of the school also attend the practice he Royal Hospital for Sick Children and Women, aining 140 beds, and that of the Bristol Eye pital, with 40 beds. The total number of beds ilable for clinical instruction is therefore about

here are numerous salaried junior appointments residents who are graduates.

cholarships and Prizes.—The following are awarded: Ashworth Hallett Scholarship, value £45, open women only; two Martin Memorial Pathocal Scholarships of £10 each; the Tibbits norial Prize, value 9 guineas, for proficiency in tical surgery; the Committee's Gold and Silver lals for fifth-year students for general proficiency; Augustin Prichard Prize, value about 6 guineas, for iciency in anatomy; the Henry Clark Prize, ie 11 guineas, for proficiency in gynæcology; the sby Leonard Prize, value 7 guineas, for proficiency urgery; the Suple Surgical Prize, a gold medal 7 guineas; the Suple Medical Prize, a gold medal 7 guineas; the Henry Marshall Prize, value £12, dressers; the H. M. Clarke Scholarship, value , for proficiency in surgery; the Sanders Scholarp, value £22 10*s.*, for general proficiency; the rett-Roué Scholarship for proficiency in diseases he eye, ear, nose, and throat, value £14; Lady erfield Scholarship, value about 25 guineas; llis Siepman Prize, for proficiency in Diseases of dren, value £25.

ristol City Senior Scholarships and those offered the counties of Gloucestershire, Somerset, Wilts, Devon, are tenable in the University. Some of Fellowships awarded by the Colston Research iety for research in the University are allotted to Faculty of Medicine.

ost-graduate Study.—Qualified medical practiers may be appointed as clinical assistants for a iod of one or more months. They may act as stants, if times permit, in more than one departnt and in any of the hospitals during their period study. They will be entitled to the use of the ical laboratories and medical library, and have the t to attend in all departments, including operas, post-graduate and ordinary clinical demonstras, and post-mortem examinations. Demonstration rses with weekly lectures are held during May, e, and July.

ll inquiries and applications for admission should addressed to the Director of Post-graduate dies (Clinical Section), Pathological Department, versity of Bristol, who can be seen on any day appointment.

urther information as to scholarships, curricula, fees can be obtained from the Dean of the Faculty Medicine or the Registrar of the University.

UNIVERSITY OF WALES.

his University has, inter alia, the privilege of nting Degrees in Medicine, and Diplomas in Public alth and Tuberculous Diseases. Preliminary rses of study for the Degrees in Medicine may be sued at any of the constituent Colleges of the iversity—viz., at Aberystwyth, Bangor, Cardiff, or ansea. The Welsh National School of Medicine situated in Cardiff and is an integral part of University College of South Wales and nmouthshire there.

articulars can be obtained on application to Dean of the Faculty of Medicine, or to the retary, Welsh National School of Medicine, wport-road, Cardiff. All classes are open to both n and women students.

ENGLISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGE OF PHYSICIANS OF LONDON AND THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Under this heading we give the regulations for the examinations enjoined by the Conjoint Examining Board of the Royal Colleges of Physicians of London and Surgeons of England, and of the Society of Apothecaries upon students desiring their respective diplomas of qualification. We do not give any list of schools recognised by these bodies as eligible to prepare students for their examinations beyond mentioning that all the schools which we have already described (under the heading of the Universities to which they are attached) are recognised as suitable places of instruction by the corporations granting medical diplomas. The courses of study at the principal colonial medical schools are also recognised as qualifying for the examinations of these corporations.

Students are required to pass a Preliminary Examination in General Education recognised by the Board, and a *Pre-Medical Examination* in Chemistry and Physics conducted by the Conjoint Examining Board before commencing the five years curriculum of professional study or some other examination recognised by the Board—namely, the examination in Chemistry and Physics for the degree in Medicine of any University recognised by the Board; a Pre-Medical Examination conducted by any of the Qualifying Bodies whose Degrees or Diplomas are registrable on the Medical Register; the Higher School Certificates of Oxford and Cambridge Universities, and the Oxford and Cambridge Schools Examination Board; the Higher Certificates of London, Bristol, Durham Universities, the Joint Matriculation Board of the Northern Universities, and the Central Welsh Board Higher Certificate. A candidate must enter for Chemistry and Physics together, and he will not be allowed to pass in one without obtaining at the same time at least half the number of marks required to pass in the other subject. He will be admitted to the examination on producing evidence of having passed the required Preliminary Examination in General Education. The examination is partly written, partly oral, and partly practical. A candidate rejected in one or both subjects of the examination will not be admitted to re-examination until after the lapse of a period of not less than three months. The fee for the examination is £3 3*s.*, for re-examination in Chemistry £2 2*s.*, and for re-examination in Physics £1 1*s.*

There are two Professional examinations called the *First* and *Final Examinations*. The courses of study for these examinations may be commenced before the Pre-Medical examination in Chemistry and Physics or some equivalent examination has been passed, provided that three terms of study are completed after the examination has been passed.

The subjects of the First Professional Examination are: Section I. (*a*) Anatomy, including Histology and Embryology. (*b*) Physiology, including Biochemistry. Section II. Pharmacology, Practical Pharmacy, and Materia Medica. A candidate must have attended at a recognised Medical School courses of instruction in Anatomy, including Embryology, during five terms, during which he must have dissected the whole body, courses of instruction in Physiology, including General Biology, Biochemistry and Biophysics during five terms, courses of instruction in Pharmacology, Practical Pharmacy, and Materia Medica. A candidate may present himself for the two Sections together or separately, but he must take parts (*a*) and (*b*) of Section I. together

until he has passed in one or both parts, but a candidate will not be allowed to pass in one part unless he obtains at the same time at least half the number of marks required to pass in the other part.

Section II. of the examination may be passed at any time before the candidate enters for the Final Professional Examination. The fee for the First Professional Examination is £10 10*s.*, for re-examination after rejection in Section I. £6 6*s.*, for re-examination after rejection in either part of Section I. £3 3*s.*, for re-examination after rejection in Section II. £3 3*s.* A candidate who produces satisfactory evidence of having passed an examination in the subjects of Section I. or of either part of Section I. and of Section II. in the examination for the degree in Medicine conducted at a University recognised by the Board will be exempted from further examination in such subjects.

Final Professional Examination.—The subjects of the Final Professional Examination are: Section I. Pathology (including Morbid Anatomy, Morbid Histology, and Clinical Pathology), and Bacteriology. Section II. Part I. Medicine, including Medical Anatomy, Forensic Medicine and Public Health. Part II. Surgery, including Surgical Anatomy and the use of Surgical Appliances. Part III. Midwifery and Gynæcology. The examination is partly written, partly practical, partly clinical, and partly oral. A candidate may take Sections I. and II. and the three parts of Section II. of the Final Examination separately or may take the whole examination together. He will be required to produce the certificates required by the regulations before being admitted to the respective parts of the examination. A candidate who produces evidence of having passed an examination for a degree in medicine in the subjects of Pathology and Bacteriology at a University recognised by the Board is exempted from Section I. The fee for admission to Section I. is £4 4*s.*; for admission to Section II., Part I., £10 10*s.*; Part II., £10 10*s.*; Part III., £6 6*s.*; and the re-examination fees are respectively £3 3*s.*, £6 6*s.*, £6 6*s.*, and £4 4*s.*

Students of recognised universities in England, Scotland, and Ireland, who have passed examinations for a degree in Medicine at their universities in the subjects of the First Examination of the Examining Board, may enter for a part of the Final Examination at the expiration of three years from the date of passing in Anatomy and Physiology on production of the required certificates.

Members of certain recognised Indian, Colonial, and Foreign universities who have passed examinations for the Degree of Doctor or Bachelor of Medicine or Surgery in the subjects of the First Examination may present themselves for the Final Examination under special conditions. The Board also grants Diplomas in Public Health, in Psychological Medicine, in Ophthalmic Medicine and Surgery, in Tropical Medicine and Hygiene, and in Laryngology and Otology. Candidates must hold a Medical qualification registrable in the United Kingdom or be Graduates in Medicine of a recognised Indian, Colonial, or Foreign University. Particulars and conditions of admission to all examinations, fees, &c., may be obtained from the Secretary of the Examining Board, Examination Hall, Queen-square, London, W.C. 1.

ROYAL COLLEGE OF PHYSICIANS OF LONDON:

THE MEMBERSHIP AND FELLOWSHIP.

The College confers two separate diplomas—the *Fellowship*, a purely honorary distinction, and the *Membership*, obtained by examination.

Membership.—The age for admission to this diploma, it will be noticed, has been changed from 25 to 23 years. The alteration in the by-law of the College is designed to enable men who have j finished house appointments to sit for an examinat for which their recent clinical experience has exac fitted them. The candidate must either have pas the examinations for the licence of the College, else be a registered medical practitioner who l obtained the degree of Doctor or Bachelor of Medic at a University recognised by the Censors Boa The examination is directed partly to patholo and partly to the practice of medicine. Credit also given to candidates who show a knowledge Latin, Greek, French, or German. Further inform tion may be obtained from the Registrar at College. The fee for admission as a Member of College is 40 guineas, except when the candidate membership is a licentiate of the College, in wh case the fee already paid for the licence deducted from the 40 guineas. The fee for examination is 8 guineas, which is reckoned part of the fee for admission in the case success.

Fellowship.—The *Fellows* are selected annua from the ranks of the *Members* by the Comitia of College.

ROYAL COLLEGE OF SURGEONS OF ENGLAND:

THE FELLOWSHIP.

The Royal College of Surgeons of England conf its diploma of Fellow upon a few distinguished pers in an honorary capacity. Two Members of l standing may also be elected to the Fellows annually. But the bulk of the Fellows obtain diploma as the result of examination.

Fellowship.—The examination for the Fellowshi divided into two parts—viz., the First Examinat and the Second Examination. The subjects of First Examination are Anatomy and Physiology, a those of the Second Examination are Surgery, includ Surgical Anatomy and Pathology. The examinati are partly written and partly vivâ voce, and incl the examination of patients and the performance operations on the dead body. The First Exami tion will in future years be held in June a December and the Second Examination in May a November.

The fees for examination are: First Examinati first admission 8 guineas, and for each readmiss 5 guineas. Second Examination, each admiss 12 guineas. The fee payable on admission to Fellowship by Members is 10 guineas and by n Members 30 guineas, in addition to examination f

A Member of the College is admissible to the F Examination at any time after receiving his Diplo of Membership. A candidate who is not a Membe admissible after passing the First Professional Exa nations of the English Conjoint Board in Anato and Physiology, or the equivalent examination in University, on the production of certificates attendance upon prescribed courses.

A Member of the College is admissible to the Sec Examination at any time after having passed First Examination, on producing evidence of hav been engaged not less than six years in the st (or study and practice) of the profession.

A candidate who is not a Member of the Coll must possess the registrable surgical and med degrees of universities recognised by the Council must have been engaged in the study (or study practice) of the profession for not less than four ye subsequent to the date of obtaining the recogni qualification, one year of which shall have been sp in attendance on the Surgical Practice of a recogni hospital. The diploma of Fellow is not confer upon successful candidates until they have attai the age of 25 years.

The Regulations may be obtained on applicatio the Secretary, Examining Board in England, Ex ination Hall, Queen-square, London, W.C. 1.

OCIETY OF APOTHECARIES OF LONDON.

he Pre-Medical and Primary examination is held rterly. Part I. includes Chemistry, Chemical sics; Practical Chemistry; Materia Medica and rmacy. Part II. includes Anatomy, Physiology, Histology. This examination cannot be passed re the completion of twelve months' Practical tomy with Demonstrations, and these subjects not be taken separately except in the event of the didate having previously passed in one.

he Final examination is held monthly except in tember. Part I. Clinical Surgery: Principles and ctice of Surgery, Surgical Pathology, and Surgical tomy, Operative Manipulation, Instruments, and liances. Part II. Clinical Medicine: Medicine, rmacology, Pathology, and Morbid Histology; ensic Medicine, Hygiene, Theory and Practice of cination; and Mental Diseases. Part III. includes wifery, Gynæcology, and Diseases of New-born dren and the Use of Obstetric Instruments.

he course of study for the *Final examination* ides attendance on the Surgical and Medical ctice, with Post-mortem Examinations, at a ital connected with a medical school for a period hree winter and three summer sessions, including urse of Practical Midwifery, with attendance on 20 wifery cases. The course of medical study must nd over five years, and the office of dresser or cal clerk must be held at a hospital or other insti- on recognised by the Society. Three academic s (33 months) must elapse after a candidate has ed the examination in Anatomy and Physiology re he can complete the Final examination.

vidence shall also be given of practical instruction nfectious Diseases and in Mental Diseases (at a tic asylum or in the wards of an institution con- ing a special ward set apart for the treatment of tal diseases), and in any two of the following ects: Ophthalmic Surgery, Laryngology with nology and Otology, Dermatology, and Diseases hildren. Candidates intending to present them- es for examination are required to give 14 days' ce. The fee for the Licence is 20 guineas. Female lidates are admitted to examinations.

laster of Midwifery.—This diploma has now been tuted and the first examinational session will be Monday, Oct. 15th, 1928. Candidates will be itted to the examination who have been regis- d practitioners for at least one year, and who have a resident appointment in an institution gnised by the Society for six months or more, and for three months have attended an antenatal c and an infant welfare centre, also recognised he Society. Until 1932 practitioners of ten years' ding may enter for the examination without further ality than the production of satisfactory evidence they have made a special study of the subjects. examination will be conducted by written papers by clinical and oral tests.

he entrance fee for the examination is £5 5*s.* and a ner fee, which at present is fixed at £5 5*s.*, will paid before their admission to the Mastery, by e who have satisfied the examiners. Candidates for first examination must send in their certificates re Oct. 1st to the Secretary of the Society, Mr. k Haydon, who will supply any other information.

he examination offices are open from 10 A.M. to M.; on Saturdays from 10 A.M. to 1 P.M. All rs should be addressed to the Secretary, Court xaminers, Society of Apothecaries of London, kfriars, E.C. 4.

PHARMACEUTICAL SOCIETY.

HOOL OF THE PHARMACEUTICAL SOCIETY OF AT BRITAIN (recognised by the UNIVERSITY OF DON).—The Pharmaceutical Society conducts inations for registration as (*a*) Chemist and gist and (*b*) Pharmaceutical Chemist. For tration as Chemist and Druggist the candidate pass (i) the Preliminary Scientific Examination jects Chemistry, Physics, and Botany); and (ii) the Chemist and Druggist Qualifying Examination (subjects Pharmacognosy, Pharmacy, Pharmaceutical Chemistry, and Forensic Pharmacy). Fee for each examination, 6 guineas; for each subsequent examination after failure, 4 and 6 guineas respectively. The Pharmaceutical Chemist Qualifying Examination (for registration as Pharmaceutical Chemist) includes Botany, Chemistry, Pharmacognosy, Pharmacy, and Forensic Pharmacy. Candidates must have passed the Preliminary Scientific Examination. Fee, 12 guineas; for each subsequent examination after failure, 6 guineas. Courses of Instruction are given for the Chemist and Druggist Qualifying Examination, and (two years' course) for the Pharmaceutical Chemist Qualifying Examination in conjunction with University College.

An Intercollegiate two years' course for the Final Examination for the degree of B.Pharm. of the University of London is also given in conjunction with University College. Medical students are admitted to the lectures and laboratory work in any or all the courses. Certificates of instruction in the School are received by the Conjoint Board of the Royal Colleges and by the University of London. Graduates in Science may carry out the research work necessary for the thesis for the Ph.D. of the University of London in the Society's Research Laboratories. Application for admission to the school, or for further information, may be made to the Dean, Prof. Greenish, 17, Bloomsbury-square, London, W.C. 1.

The *London College of Pharmacy for Ladies*, 7, Westbourne Park-road, W.2, which is under direct medical supervision, offers a nine months' course of instruction to women in preparation for the Apothecaries' Hall Diploma in dispensing.

METROPOLITAN CENTRES AFFORDING POST-GRADUATE FACILITIES.

Certain organisations and institutions provide for the needs of the medical student in his cirriculum and for the post-graduate student requiring special forms of instruction and opportunities for clinical observation. Many of the institutions are recognised by the English Conjoint Examining Board as a place of study for the fifth year of the curriculum.

Special Diplomas in public health, tropical, psychological, and ophthalmic medicine, medical radiology and electrology, laryngology, otology, and tuberculosis are now granted in proof of intensive work along the different lines indicated. Of these, the Diploma in Public Health, being regulated by the General Medical Council, is registrable. Appointments to and promotion in the various Services are largely dependent on the possession of a particular diploma, and each syllabus of the special courses available at the institutions which follow, either with or without association with the Fellowship of Medicine, is planned to afford the necessary instruction.

The Special Diplomas are dealt with fully on p. 420, where the connexion between the Bethlem Royal Hospital and the Maudsley Hospital and the Diploma in Psychological Medicine is referred to. Similarly the Hospitals of the Metropolitan Asylums Board provide post-graduate as well as under-graduate facilities, while the hospitals of the Seamen's Hospital Society both supply the instruction necessary for the Diploma in Tropical Medicine and Hygiene, and coöperate in the activities of the Fellowship of Medicine and Post-Graduate Medical Association.

HOSPITALS OF THE METROPOLITAN ASYLUMS BOARD.—These hospitals, of which there are 18 in the metropolis and the near vicinity, will shortly come under the administrative powers of the London County Council. The Board hold classes of instruction in fevers at all the infectious hospitals at which ordinary medical students attend, but the only hospital to which

a class of instruction for the diploma in public health is attached is the North-Eastern Hospital. This course of lectures and demonstrations (three months) on clinical practice and in hospital administration is given at the North-Eastern Hospital, St. Ann's-road, Tottenham, N. 15, by the medical superintendent, on Mondays and Wednesdays at 4.45 P.M., and alternate Saturdays at 11 A.M., beginning Monday, Oct. 1st, 1928. This course complies with the requirements of the revised D.P.H. regulations of the General Medical Council. Application for further information should be made to the Clerk to the Metropolitan Asylums Board, Victoria Embankment, London, E.C. 4.

SEAMEN'S HOSPITAL SOCIETY.—The Society possesses seven establishments: the Dreadnought Hospital at Greenwich, 250 beds; the Albert Dock Hospital, E. 16, 53 beds; the Hospital for Tropical Diseases, Endsleigh-gardens, W.C. 1, 58 beds; Tilbury Hospital, Tilbury Docks, Essex, 80 beds; Queen Alexandra Memorial Hospital, Marseilles, 60 beds; King George's Sanatorium for Sailors, Bramshott, Hants, 80 beds; and the Angas Home, Cudham, 36 beds. Total, 617 beds. It has also a Dispensary in the East India Dock-road from which patients are transferred to the hospitals. In conjunction with the Fellowship of Medicine arrangements have been made for a course of operative surgery at the Dreadnought Hospital.

The London School of Hygiene and Tropical Medicine is located in the same building as the Society's Hospital for Tropical Diseases at 23, Endsleigh Gardens, Gordon-street, W.C., and the clinical teaching of the School is given in the Hospital (see p. 420).

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

Certain hospitals or groups of hospitals are working in conjunction with this Association, which has its office in the House of the Royal Society of Medicine, 1, Wimpole-street, W.1. It provides intensive courses in general and special branches of medicine and surgery, which are arranged at short intervals, and also courses in special subjects the nature of which are indicated by the groups of hospitals coöperating in its teaching work. Demonstrations in clinical medicine, in surgery, and in ophthalmology are arranged also from October to July, and are open to all members of the medical profession without fee. Membership of the Fellowship is open to all qualified medical practitioners, the membership fee being 10*s.* per annum, which includes the subscription to the monthly *Post-Graduate Medical Journal*. Full information regarding the courses of study can be obtained from the Secretary.

GENERAL PRACTICE.

ROYAL NORTHERN GROUP OF HOSPITALS.—The Royal Northern Hospital, Holloway, London, N. 7, is the main institution of the Royal Northern Group of Hospitals, which includes the Royal Chest Hospital, City-road, E.C., Hospital of Recovery, Southgate, and the Reckitt Convalescent Home, Clacton-on-Sea. The total number of beds in the group is 400. Besides the honorary staff there are six anæsthetists, three pathologists, resident medical officer, resident house physician, three resident house surgeons, two resident casualty officers, and one resident obstetric surgeon. The large rectangular and circular wards, each of which contains 25 beds, the children's ward for children under 5 years of age, the observation wards in the new Casualty Department, the two operation theatres, and out-patient department are designed with a view of offering the greatest facilities for clinical work. The Special Departments include the following: Fracture, genito-urinary and neurological, physico-therapeutic, pathological (under a director of clinical pathology), tuberculosis, venereal diseases, and X ray (recently remodelled). Patients are removed to the Hospital of Recovery by ambulance a few days after operation. Demonstrations are given daily in the wards and out-patient departments. Clinical assistants (qualified), clinical clerks, and pathological c are appointed in the general and special departn and may receive certificates at the end of their t of office. A new maternity department has opened, and the light department has been re-equi

Weekly lectures by members of the hon. me and surgical staff are free to all medical practitio Special classes and demonstrations are being arra for post-graduates. They include instruction in ge medicine and surgery, and also lectures and de strations in special subjects at the Royal Nor and Royal Chest Hospitals.

PRINCE OF WALES'S GENERAL HOSPITAL, Totten N. 15.—This hospital is in the midst of a de populated neighbourhood and contains medical, gical, gynæcological, and children's wards, having beds. There are special departments for gynæcol cases, diseases of the eye, ear, throat, and nose, diseases, plastic surgery, medical electricity, r graphy, and dentistry. Operations are performed afternoon of the week (except Saturday) at 2.30 Clinical instruction, ordinarily including labor classes, and lectures are given in the wards and patient departments, laboratories, and lecture h connexion with the North-East London Post-Gra College attached. There are five resident me officers, and clinical assistants are appointed certain conditions. Special intensive post-gra courses are also held at intervals throughout year. Further particulars in regard to the ho may be obtained from Dr. S. C. Shanks, Secreta the Medical Committee, 87, Harley-street, W or from Mr. T. H. C. Benians, F.R.C.S., Dean c College, at the Hospital.

WEST LONDON HOSPITAL, Hammersmith, This hospital has 210 beds. Attached to the ho is the West London Post-Graduate College. practice of the hospital is reserved exclusivel qualified men. Instruction is given in the m and surgical out-patient rooms and demonstra are given in the wards. Clinical assistant are obtainable in the various general and s out-patient departments. Special classes are in Diseases of the Throat and Nose, Skin, Eye, and in Gynæcology, Medical Electricity, O tive Surgery, Bacteriology, Anæsthetics, Inte Surgery, Medical and Surgical Diseases of Chi Blood and Urine, Clinical Microscopy, Cystos Venereal Diseases, and Operative Ophthalm Radiography, X Ray Therapy. The accommod for post-graduates consists of a lecture room, tog with reading, writing, and class rooms. The ho has a fully equipped pathological laboratory, at instruction is given in elementary bacteri The certificate of the hospital is accepted b Admiralty, War Office, Colonial Office, and Office in cases of study leave. Further inform can be obtained on application to the Dea Henry Simson, at the Hospital. Secretary o Post-Graduate College Mr. C. Cole, and of the Ho Mr. H. A. Madge.

LONDON TEMPERANCE HOSPITAL, Hampstead N.W. (Established 1873; Incorporated 1917.)- hospital contains 135 beds. The medical surgical practice of the hospital is open to stu and practitioners. Operations: Monday, 1.30 Tuesday, 2.30 P.M., Wednesday, 9 A.M. and 1 Thursday, 8 A.M., Friday, 10 A.M. and 3 P.M. Saturday, 9 A.M. New Out-patient Departmen special diseases have been opened: Neur Diseases of the Stomach and Disorders of Dige Diseases of Women, Genito-urinary Diseases, Di of the Rectum, and Dermatology.

HAMPSTEAD GENERAL AND NORTH-WEST LO HOSPITAL.—In-patient Department: Haverstoc N.W.; Out-patient Department: Bayham-s Camden Town (130 beds—viz., 102 free, 8 isolatio observation, &c., and 20 paying or contributory). Hampstead and the populous districts of Kentish and Camden Town. The out-patients, with the

of Hampstead casualty and emergency cases, nd exclusively at the Out-patients' Department, ham-street, Camden Town. Further particulars ı the Secretary at the hospital. Post-graduate ‹ is in connexion with the Fellowship of icine.

UEEN MARY'S HOSPITAL, Stratford.—This hospital developed from the West Ham and Eastern eral Hospital. It has 200 beds and ministers ı very poor public. Founded as a dispensary 361, and developing into a hospital in 1890, steady nsions have been made during this century. oyal Charter was obtained in 1917, and the hospital become a valuable charity with a full medical of physicians and surgeons, and specialists for ecology, obstetrics, ophthalmological surgery, ology, and dental surgery. The Fellowship of icine and Post-Graduate Medical Association es frequent use of the opportunities here offered. rticulars may be obtained from Major Raphael son, Secretary, Queen Mary's Hospital, Strat-, E. 15.

NEUROLOGY.

HE NATIONAL HOSPITAL, QUEEN-SQUARE, W.C.—hospital, with the Convalescent Home at East hley and branch at Clapham Park, contains 265 and cots The out-patient physicians attend every day, Tuesday, Thursday, and Friday at 2 P.M., the physicians daily. Clinical clerks are inted under physicians and clinical assistants to patient physicians. Post-graduate Courses of ures and Demonstrations are held three times y year, usually commencing in January, May, and ber, and lasting eight weeks. Special Courses in ological Ophthalmology, Neuropathology, and Anatomy and Physiology of the Nervous System given. The Pathological Laboratory is available pecial work under the Pathologist.

EST END HOSPITAL FOR NERVOUS DISEASES.—institution is recognised by the University of lon as a school of instruction in Neurology for M.D. degree, Branch III., and for the D.P.M. Out-patient Department is in Welbeck-street, W.; In-patient Department is at Gloucester-gate, nt's Park, and contains 80 beds. Completely oped with pathological and other special depart-s, the hospital offers every facility for instruction eurological subjects. In conjunction with the lem Royal Hospital, it offers courses of instruction he D.P.M. Additional series of clinical demon-ions, apart from the general practice of the ital, are held regularly each session, and the ital coöperates with the Fellowship of Medicine e programmes of special post-graduate teaching nised by the Association. Appointments as Clinical Assistants in the Out-patient Depart-are open to registered medical practitioners. Savill Memorial Prize (value £15) and Medal are ed biennially for competition among post-uate students who have attended the practice e hospital or any special course. Full particulars be obtained from Dr. C. C. Worster-Drought, ., or J. P. Wetenhall, Secretary, 73, Welbeck-t, W.

OSPITAL FOR EPILEPSY AND PARALYSIS, &C., a Vale, W. (85 beds).—Both in-patient and out-nt departments of this hospital are open free to nts as well as to medical graduates. The patient department is open every week-day ot Saturday at 2 P.M.

HEART AND LUNGS.

OSPITAL FOR CONSUMPTION AND DISEASES OF THE RT, Brompton.—The hospital contains 333 beds. Sanatorium at Frimley contains 100 beds and eds for paying patients. Six house physicians e in the hospital for a term of six months; their s include attendance in the out-patient depart-. An additional month may be spent at the torium. Pupils are admitted to the practice of hospital. Clinical Demonstrations are given throughout the year by members of the medical staff. Clinical assistants are appointed to the physicians in the out-patient department and clinical clerks to the physicians in the wards. The medical practice of the hospital is recognised by the English Conjoint Board and also by the University of London, the Apothecaries' Society, and the Army and Navy and Indian Medical Boards. The hospital is open to post-graduates and students. During the month previous to each conjoint examination the teaching will be as far as possible for students about to enter for the final examination. The hospital practice is open to post-graduate students.

MOUNT VERNON HOSPITAL (INCORPORATED) FOR TUBERCULOSIS AND DISEASES OF THE LUNGS AND HEART, Northwood; CENTRAL OUT-PATIENT DEPARTMENT, Fitzroy-square, W.—The hospital contains 150 beds, Medical and Surgical; 50 beds reserved for children requiring surgical aid. Clinical Demonstrations are given by the visiting Medical Staff at the hospital at Northwood. New departments for artificial light treatment have been opened both in the hospital and the out-patient departments. Clinical assistants are appointed to physicians in the wards and in the out-patient department.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E. 2.—Tuberculosis Dispensary (Boroughs of Bethnal Green and part Hackney). Special Departments: Surgical, Laryngological, Radiological, Pathological, Electrocardiographic. Assistants are appointed to the Clinics, and a limited number of research workers to the Pathological Department. The in-patient staff visit generally in the afternoon; out-patients at 2 P.M. The post-graduate students are admitted on payment of fees which entitle them to attendance at clinics, post-mortem demonstrations, and operations. Special demonstration and lecture courses are provided, and a club room. Graduates desiring Assistantships in any department should apply to the head of the Special Department.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, London, W. (founded 1857).—The practice of the hospital, both in the wards and out-patient department, is open daily to post-graduates and others. Systematic courses of instruction, with lectures and clinical demonstrations, are arranged during the winter and summer sessions; in addition an intensive course, of a fortnight's duration, takes place in January, July, and October of each year. The hospital is fully equipped with all the modern instruments for the investigation of the diseases of the Cardiovascular system, and facilities exist for those requiring practical instruction in Electrocardiography, X Rays, and other graphic methods. Clinical Assistants in the Out-patient Department are appointed from time to time.

DISEASES OF WOMEN AND CHILDREN.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. 1. (contains 252 beds).—The practice is open to students of both sexes who have completed four years of medical study and also to qualified medical men and women. The medical staff are recognised by the University of London as teachers in Diseases of Children. Arrangements have also been made with University College Hospital and the London School of Medicine for Women for the routine admission of their students of both sexes to clerkships and dresserships in the wards. Appointments are made every three months to eight medical clerkships, which are open to students of the hospital. Clinical instruction is given daily by members of the visiting staff. Clinical Clerks are appointed once a month. In the pathological department facilities are afforded to post-graduates for obtaining theoretical and practical instruction in Clinical Pathology and Bacteriology, and in Medical Biochemistry in the Pathological and Biochemical Laboratories. Courses of eight to ten Lecture-Demonstrations are given at weekly intervals twice a year in both subjects

(Clinical Pathology and Bacteriology, and Biochemistry.) Time spent in clerking and dressing is recognised by the Universities of London, Oxford, and Cambridge, as well as by the English Conjoint Board as part of the final curriculum. These appointments are open to students of all recognised medical schools. In addition, special lectures in post-graduate work are held throughout each term of the year, as well as routine post-graduate instruction daily.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL (formerly QUEEN CHARLOTTE'S LYING-IN HOSPITAL) AND MIDWIFERY TRAINING SCHOOL, Marylebone-road, N.W.—This hospital receives over 2000 patients annually, besides having a large out-patient department. Medical pupils are received at all times of the year. Pupils have unusual opportunities of seeing obstetric complications and operative midwifery, on account of the very large number of primiparous cases—nearly one-half of the total admissions. Clinical instruction is given on the more important cases which present themselves. They also receive valuable instruction in the Antenatal Department, where over 4000 patients attend yearly. Special Lecture-demonstrations are given by members of the staff. Certificates of attendance at this hospital are recognised by all the Universities, Colleges, and licensing bodies. Pupil midwives and maternity nurses are received and specially trained. A Residential College provides accommodation for students and qualified practitioners (both men and women), and is opposite the hospital, with which it is in telephonic communication. Arrangements have been made for Medical Students to receive the preliminary instruction in Practical Midwifery recommended by the General Medical Council.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, Waterloo Bridge-road, S.E.—This hospital, founded at the date indicated by its title, has recently undergone considerable extensions, and has now 130 beds, while the latest buildings include a nurses' home and a new operation theatre. It has a full staff of surgeons, physicians, and gynæcologists, and also special departments. A new orthopædic department is in use, and a new nursing home is in occupation. The physiotherapeutic and electrical department has this year been extended and re-equipped. Particulars of post-graduate courses, which are held from time to time, can be obtained from the Secretary or from the Fellowship of Medicine.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—138 beds and a large out-patient department; the home at Broadstairs has 50 beds. Private wards in the Nurses' Home, named after H.R.H. Princess Mary (Viscountess Lascelles), at 29, Tite-street, adjacent to the hospital. Patients must be under the care of a consultant of one of the hospitals of London, and the question of payment for his fees is arranged between him and the child's parents. Application for admission should be made to the Secretary.

QUEEN'S HOSPITAL FOR CHILDREN (*late North-Eastern Hospital for Children*), Hackney-road, Bethnal Green, E.2.—For the sick children of the poor under 14 years of age. 134 beds in London and 36 at the seaside branch, "Little Folks" Home, Bexhill.—Special departments in Ear, Nose, Throat, Skin and Eye, and Dentistry. A radiologist attends four times weekly. There are massage and light departments, and a special whooping-cough physician. The practice of the hospital is open to students by arrangement with the medical staff, and post-graduate instruction in children's diseases, lectures and demonstrations are given at times notified by the Fellowship of Medicine.

PADDINGTON GREEN CHILDREN'S HOSPITAL (46 beds).—This is a small hospital with a large out-patient department and a full staff, with eye, ear, skin, and dental departments. The facilities which it offers for observation of clinical practice are used by the Fellowship of Medicine.

HOSPITAL FOR WOMEN, Soho-square, W. (80 be —The teaching is available for post-graduates o in limited numbers. Operations take place dail 2 o'clock except on Saturdays. The X ray dep ment is supplied with the latest installation for diagnosis and treatment, and experience also be gained in the treatment of malignant dis by means of radium. Incorporated is the Lon School of Gynæcology, comprising attendance out-patient department, operating theatre, clin lectures, and X ray treatment.

SAMARITAN FREE HOSPITAL FOR WOMEN, Mar bone-road, N.W. (70 beds).—Qualified practitio are admitted as clinical assistants to both in- and out-patient departments. Full particu in regard to fees may be obtained on appl tion to the Secretary to the Medical Committe the hospital.

EAST LONDON HOSPITAL FOR CHILDREN DISPENSARY FOR WOMEN, Glamis-road, Shadwell —136 cots. Clinical instruction is given by physicians and surgeons to the hospital to stud in the fifth year of the curriculum. Two clin clerkships for qualified or unqualified students open every three months subject to reappointme desired. Clinical assistants (qualified men only) from time to time appointed in the out-pat department. Any additional information may obtained on applying to the Secretary.

CHELSEA HOSPITAL FOR WOMEN, Arthur-st Chelsea, S.W.3.—This hospital has about 100 b and a certain number are reserved for patients pa £5 5*s*. a week and small fees to the surgeons operations. There is a convalescent home of beds at St. Leonards. There is a large out-pat department where the patients are seen at a nom payment.

THE EVELINA HOSPITAL, Southwark (76 cots), THE BELGRAVE HOSPITAL, Clapham-road, give facilities for the attendance of out-pat practice.

OPHTHALMOLOGY.

ROYAL LONDON OPHTHALMIC HOSPITAL (M fields, 1804–1899), City-road, E.C.—138 beds. attendance at Moorfields Eye Hospital is now large. Operations are performed daily from 10 to 1 P.M., and four surgeons attend on each Students are admitted to the practice of the hosp and special courses of instruction are gi which extend over a period of five months, members of the Surgical Staff, beginning in Oct and March. A composition fee entitles student a perpetual ticket, and will admit them once t the lectures and classes and to the examinatio the hospital's full certificate. The instruction classes are arranged so as to meet the requirem for the various diplomas in Ophthalmology, both preliminary examination in Anatomy, Physic and Optics, and those subjects required in the se part. Students of the hospital are eligible for offices of house surgeon or clinical and ju assistants. Junior assistants are appointed e three months.

ROYAL WESTMINSTER OPHTHALMIC HOSP Broad-street, Holborn, W.C. (84 beds).—This hos has recently removed from its original site at Ch Cross to much larger premises, well adapted teaching purposes. The clinics are held in afternoons from 1 P.M. Operations are perfo daily in the theatre at 3 P.M. Lectures and prac classes in the various branches of Ophthalmo including Operative Surgery, Bacteriology, and P ology, are held during the winter and summer ses at 5 P.M. The practice of the hospital is ope both men and women practitioners, and me students. Post-graduate students at the hospita eligible for appointment as house surgeon, assi house surgeon, refraction assistant (six appointm paid), and senior and junior clinical assistant

ROYAL EYE HOSPITAL, St. George's-circus, Southrk, S.E.—There are 44 beds and 2 cots. Clinical truction is given to students and post-graduates ly at 2.30 P.M., and Lectures, Demonstrations, l Laboratory Classes are arranged in preparation for minations in Ophthalmology. Apparatus has n installed for the Microscopy of the Living e. Post-graduate students are eligible for appointnt as Clinical Assistants and as Refraction Officers.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Juddeet, St. Pancras, W.C.—This hospital has 40 beds, l clinical teaching is given daily. Classes of truction in the use of the ophthalmoscope, with monstrations on cases, and also classes on other jects, to meet the requirements of the Conjoint ard for the D.O.M.S., and of the University of ndon for the M.S. in Ophthalmology, are given ring the winter months, commencing in October. is school is recognised as a teaching institution by Universities of London and Oxford, as well the English Conjoint Board. It receives a tion of the pupils of the University College spital for the purposes of ophthalmic training. e Pathological and Bacteriological Laboratories ve been rendered available for the use of any thalmic surgeons who desire to send specimens examination. A small fee is charged for a report. Clinical Demonstration is held by members of the ff at the Central London Ophthalmic Hospital at .M. on the first Tuesday of every month. Students Medicine and Medical Practitioners are admitted hout fee.

GENITO-URINARY AND VENEREAL DISEASES.

LONDON LOCK HOSPITAL AND HOME. (Founded 6.)—In the institution at Harrow-road, W., there 202 beds. In the male department and outient department in Dean-street, Soho, W., there 38 beds. Male and female patients are seen at Dean-street, Oxford-street, W.1, at any time m 9 A.M. until 9 P.M. daily. Intravenous injecns are given at every clinic. Irrigations for males given daily from 8 A.M. to 9 P.M. Female ients and children are seen daily at 283, Harrowd, Paddington, W.9, from 9 A.M. until 8 P.M. gations for females are given at any time. The pital is linked up with the Fellowship of Medicine; cial courses of lectures are held in May and vember each year, and application for tickets uld be made direct to the Secretary of the Fellow). Only a limited number of practitioners and lents are permitted to attend the practice of the nale Lock Hospital, and application should be le to Major Corbett (Dean) at the Male Lock spital, between the hours of 11 A.M. and 5 P.M., o the Secretary at the Head office, 283, Harrowl, W.9.

T. MARK'S HOSPITAL FOR CANCER, FISTULA, AND ER DISEASES OF THE RECTUM, City-road, E.C.1. unded 1835.) (62 general beds and 10 private s.)—For men and women. Operations are perned on Mondays, Wednesdays, and Thursdays at P.M. Medical practitioners and students are ted to the operations and to the clinical instruction the wards and in the out-patient department. fortnightly courses held during year in coöperawith the Fellowship of Medicine.

T. PETER'S HOSPITAL FOR STONE AND OTHER NARY DISEASES, Henrietta-street, Covent Garden. ablished 1860. 30 beds for men and 2 beds for nen and children.—The X ray department is nostic only. A loan of radium salts for research k was made by the British Empire Cancer Camm in 1925. Medical practitioners and students invited to the clinical instructions which are given the wards and out-patient department daily, pting that the only out-patient clinic open to lical women is that held at 2 P.M. Fridays for nen and children, and to the operations in the tre on Mondays at 2.30 P.M., and Wednesdays and Fridays at 2 P.M. Post-graduate Courses of Lectures are arranged through the Fellowship of Medicine from time to time.

ALL SAINTS' HOSPITAL FOR GENITO-URINARY DISEASES.—The in-patient department, 30 beds, is at Finchley-road, and the terms of admission are free or by payment according to means. The out-patient department in the Vauxhall Bridge-road provides clinical instruction through the Fellowship of Medicine.

ORTHOPÆDICS.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Great Portland-street, W. (200 beds.)—This institution is a good example of the fusion of small and scattered activities for the creation of an effective whole. The three orthopædic hospitals of the metropolis were combined for the formation of this central institution at the instance of the King's Hospital Fund, with the result that the grants from this Fund and the income from subscriptions can now be used to far better purpose and with economy. The hospital has also been approved by the Ministry of Health for the treatment of tuberculosis, the connexion between orthopædics and the therapeutics required in many forms of tuberculosis having become obvious. Country branch at Brockley Hill, Stanmore. (214 beds.)

EAR, NOSE, AND THROAT.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.—The hospital is open daily to all qualified medical practitioners on presentation of their visiting cards. Demonstrations of the cases and clinical instruction are given daily by the chief surgeon of each clinic. Lectures each Friday at 4 P.M. An intensive Course of Lectures with Operative Surgery Class, Peroral Endoscopy Class, and Pathology Class is given twice yearly—in May and October. Preparatory courses in Methods of Examination and Diagnosis at frequent intervals. Consultations on interesting cases take place on the fourth Wednesday in each month at 4 P.M. Clinical Assistants are appointed and are expected to hold office for at least three months. They are required to attend twice weekly at 1.30 o'clock for the afternoon, and at 4.30 o'clock for the evening clinics.

GOLDEN-SQUARE THROAT, NOSE AND EAR HOSPITAL (with which is amalgamated the London Throat Hospital, Great Portland-street).—Clinical instruction in the diagnosis and treatment of disease is given daily in the out-patient department from 2 to 5 P.M., and on Tuesdays and Fridays from 6.30 to 9 P.M. There is an annual out-patient attendance of over 50,000. Minor operations are performed on Mondays, Wednesdays, and Fridays, at 9.30 A.M. New wards and in-patient operating theatres have been opened recently, and the hospital now contains 73 beds. Practitioners and medical students are admitted to the practice of the hospital, and clinical assistants are appointed periodically.

METROPOLITAN EAR, NOSE, AND THROAT HOSPITAL. (Founded 1838.)—The hospital is in Fitzroy-square, W. The Out-patient Department is opened daily (Saturdays excepted) at 2.30 P.M. to all medical practitioners and senior students for acquiring clinical instruction and technical knowledge. Operations upon in-patients are performed on Tuesdays, Wednesdays, and Thursdays at 10 A.M. Clinical Assistants are appointed as vacancies occur, and have responsible duties.

SKIN.

LONDON SCHOOL OF DERMATOLOGY, ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.—In-patient Department (33 beds) at 262, Uxbridge-road, W. Out-patient Clinics are held daily at 2 and 6 P.M. (Saturdays 2 P.M. only), when demonstrations are given on the cases presenting themselves. The Chesterfield Lectures, constituting a systematic course in dermatology, are given on Tuesdays and Thursdays at 5 P.M., from October to

March, by the hon. medical staff of St. John's Hospital and the physicians in charge of the Dermatological Departments of the London Teaching Hospitals. The lectures are free to those attending the practice of the hospital and to registered medical students. At the end of the course an examination is held for the Chesterfield Medal in Dermatology, and is open to those who have attended three-quarters of the lectures. The Electrical Department is open daily from 2 to 4 P.M., except on Wednesdays and Saturdays. Laboratory Courses in the Pathology and Bacteriology of the Skin can be arranged.

THE LONDON SKIN HOSPITAL (Fitzroy-square), and the HOSPITAL FOR DISEASES OF THE SKIN (Blackfriars-road), admit students to their practice, which is among out-patients.

CENTRES OUTSIDE LONDON AFFORDING EDUCATIONAL FACILITIES.

Nearly every hospital of a general character in the country having more than 150 beds falls within this category, and certain of them have already been noticed in connexion with the universities to which their clinical practice is attached.

The following alphabetical list includes the provincial hospitals which are recognised by the English Conjoint Board for a part of the required training in medical and surgical practice through clerkships and dresserships.

BATH ROYAL UNITED HOSPITAL, Bath.—This hospital contains 212 beds, 72 of which are situated in Combe Park, Bath, and are for *paying patients* only, and possesses X Ray, Massage, Bacteriological Departments, a Pathological Laboratory, and a fine library. Secretary: Mr. J. M. Sheppard. V.D. Clinics are held on Tuesdays (for women), and on Fridays and Saturdays (for men), at 5 P.M., and Ear, Throat, and Nose Clinics on Thursdays, at 4 P.M.

BEDFORD COUNTY HOSPITAL, Bedford.—This hospital has 111 beds, including 15 beds in the paying wards, X Ray and Pathological Departments. There is in connexion with the institution a convalescent home (20 beds) at Aspley Heath, nr. Woburn Sands. The hospital is approved by the University of London for the M.D. and M.S. Examinations. Secretary: Mr. Beauchamp Wadmore.

BRADFORD ROYAL INFIRMARY, Bradford.—This hospital contains 215 beds and, in addition, has 50 recovery beds at the Woodlands Convalescent Home, Rawdon. There are 4 Honorary Consulting Physicians, 1 Honorary Consulting Surgeon, 1 Honorary Consulting Laryngologist, 1 Honorary Consulting Gynæcologist, 1 Honorary Consulting Pathologist, and 1 Honorary Consulting Dental Surgeon. The Acting Staff consists of 3 Honorary Physicians, 4 Honorary Surgeons, 1 Honorary Radiologist, 1 Honorary Laryngologist, 1 Honorary Ophthalmic Surgeon, 1 Honorary Dental Surgeon, 2 Honorary Assistant Physicians, 2 Honorary Assistant Surgeons, 1 Honorary Assistant Radiologist, 5 Anæsthetists, 1 Pathologist, 1 Resident Surgical Officer, 1 House Physician, and 4 House Surgeons. The material passing through the surgical wards consists of major operations, chiefly abdominal and gynæcological work, and affords excellent facilities for either students or post-graduates. There are special clinics for Orthopædic cases and for electrotherapeutic and sunlight treatment. Plans for a new hospital of 360 beds with an additional self-contained block for 70 paying patients have been adopted and building operations have commenced. Secretary-Superintendent: Mr. J. J. Barron.

COVENTRY AND WARWICKSHIRE HOSPITAL, Coventry (established 1840).—There are 307 beds available at this hospital at the present time. At the beginning of this year a large house and extensive grounds, situated about 3½ miles from the centre of the city, were purchased, which will be opened at the end of the year as an annexe to the hospital. The bu ing is to be styled the "Alcock" Convalesc Hospital, and will provide for at least another patients. At the main hospital there are separ Medical, Surgical, Maternity, Children's and Accid Wards, also a separate Ophthalmic Block comp with its own theatre. There are separate departme and clinics for Ear, Nose and Throat Diseas X Ray, Electrical and Sunlight treatment; also V clinics. An up-to-date Pathological Laboratory opened early in the year, and a second gen operating theatre.

DERBYSHIRE ROYAL INFIRMARY, Derby.—This a General Hospital containing 336 beds. It founded in 1810, and was entirely rebuilt in 1892- In recent years there have been numerous alterati and additions to keep pace with modern requireme The Hospital is built on the pavilion system provides, in addition to the usual Medical Surgical blocks, a separate Ophthalmic block of beds, a separate Children's block of 34 beds (Med and Surgical), Gynæcological Wards, and an Throat, and Nose Department. There is a la and well-equipped Out-patient Department, separate Orthopædic, X Ray, Electrical, Pathologi and Venereal Diseases Departments. The Honor Visiting Staff consists of 2 Honorary Physician Honorary Surgeons, 1 Honorary Ophthalmic Surg 1 Honorary Gynæcologist, 1 Honorary Assist Physician, 1 Honorary Assistant Surgeon, 1 Honor Pathologist, and 2 Honorary Surgeon Dentists. salaried Medical Staff consists of a non-Resident S of 1 Surgeon-in-charge of X Ray and Electr Departments, 1 Surgeon-in-charge of Venereal Dise Department, 3 Anæsthetists, and a Resident Staff House Surgeons, 1 House Physician, and 1 Assist House Surgeon and Casualty Officer. Regist Medical Students are admitted to witness the med and surgical practice on payment of fees. Supe tendent and Secretary: Mr. Walter Banks, F.C.I.

GLOUCESTERSHIRE ROYAL INFIRMARY AND INSTITUTION, Gloucester.—This hospital, which granted the title of "Royal" on the occasion of H Edward VII.'s visit to Gloucester in the year 1 has 140 beds. Secretary: F. J. Symons. An elect and massage department has been established venereal clinic opened. Also ear, nose, and th department, X ray department, ultra-violet department, orthopædic department, dental dep ment, and pathological laboratory.

HULL ROYAL INFIRMARY, Hull.—This hos contains 267 beds, and since its establishmen 1782 has undergone steady additions and impr ments, including up-to-date Ophthalmic, Radiolo Nose, Throat and Ear, Dental, V.D., Violet Rays Pathological Departments. Recent extensions inc a new Operating Theatre, Nurses' Home, and ex sions to the old X Ray, Electrical, and Out-pa Departments. Work is in progress on the erec of a block of 100 beds, being the first instal of a new 500-bed hospital which it is prop eventually to build on a site which has been g the the Infirmary at Sutton-on-Hull. The Honc Staff consists of 2 Consulting Physicians, 3 Consu Surgeons, 2 Consulting Ophthalmic Surgeon Physicians, 4 Surgeons, 1 Ophthalmic Surgeo Aural Surgeon, 1 Radiologist, 1 Pathologis Assistant Physicians, 2 Assistant Surgeons, 1 Assis Ophthalmic Surgeon, 1 Assistant Aural Surg 1 Dental Surgeon, 1 Assistant Dental Surgeo Anæsthetists, 1 Officer-in-charge of V.D. Departm Resident Staff: 1 House Physician, 1 House Surg 1 Assistant House Physician, 2 Assistant H Surgeons, 1 Assistant Surgeon to Special Departm 1 Casualty Officer. An annexe at Withernsea accommodation for 30 patients.

KENT AND CANTERBURY GENERAL HOSP Canterbury.—The hospital contains 120 beds. P of the staff are admitted to the practice of the hos Operations daily. There is an Ophthalmic Depart

two wards for in-patients, a Venereal Clinic, an opædic, Massage, and Electrical Department, Actinotherapeutic Department. Secretary: W. T. Southwood.

EICESTER ROYAL INFIRMARY, Leicester.—he General Infirmary there are 333 beds, and at Children's Hospital in connexion, 70; venereal ases, 17; total 420 beds. A reconstruction me has been carried out, and £250,000 spent ringing the accommodation of the institution modern standard of efficiency. This scheme included the provision of two modern operating tres, two new wings, and self-contained out-nts' department. The Children's Hospital has reconstructed and enlarged by the addition of ird ward at a cost of £14,500. Pathological oratories and post-mortem rooms were rebuilt at st of £11,000, also an orthopædic out-patient rtment at a cost of £9500, £5000 of which was ided by the Freemasons of the province as war memorial. The Nurses' Home has recently rgone enlargement by 60 bedrooms, and now ides for 160 nurses and staff. The 150th versary of the Institution has recently passed, a sum of £100,000 was raised in commemoration. ortant and extensive improvements are (1928) carried out. An old central wing erected in is being replaced by a new wing of three wards, cost of £48,000. Other structural improvements being effected at a cost of £25,000, comprising nstruction of the kitchens, new temporary l of 30 beds, and a new venereal disease depart-t. There are ten resident salaried medical officers z., four house surgeons, two house physicians, anæsthetists, and two dressers. Most of the s are filled halt-yearly and afford exceptional rtunities for post-graduate experience and senior ents. Dressers are given an honorarium. ost-graduate course of lectures is arranged ually by the Leicester Medical Association, also clinical classes are held for graduates pre-ng for M.D. and M.R.C.P. New accommodation esident medical officers has been erected.

ORFOLK AND NORWICH HOSPITAL, Norwich.—hospital has at present 338 beds. There is a alescent home with accommodation for 35 nts at Cromer. The Honorary Medical and ical Staff consist of 2 Consulting Physicians, nsulting Surgeons, 1 Consulting Radiologist, 1 ulting Ear, Nose and Throat Surgeon, 3 Physi-s, 3 Surgeons, 1 Assistant Physician, 3 Assistant eons, 1 Surgeon, Ear, Nose and Throat Depart-t; 2 Ophthalmic Surgeons, 1 Radiologist, 1 ologist and 2 Dental Surgeons. There are 3 orary Anæsthetists and Honorary Assistants to Ear, Nose and Throat Department, the X ray artment, Ophthalmic Department, and Cardio-ular Clinic. Other medical officers are: 1 stant Pathologist and 1 Assistant to the Venereal ases Department. The Resident Medical Staff ists of 1 House Physician, 3 House Surgeons, 1 se Surgeon to the Ear, Nose, Throat, and Eye artment, and 1 Casualty Officer. A private nts' home has recently been opened. Students dmitted to the practice of the Hospital for a fee 5 5s. for six months. House Governor and etary: Mr. Frank Inch.

ORTHAMPTON GENERAL HOSPITAL, Northampton. wo new wings were opened in 1904 and the old lings entirely renovated and rearranged. In a new isolation block of 30 beds was opened. number of beds is 230. Non-resident pupils ive and have every opportunity of acquiring a tical knowledge of their profession Pupils can eceived at any time. There is an up-to-date ological Laboratory; also X Ray and Thera-ic Department and V.D. Clinic.

ORTH STAFFORDSHIRE ROYAL INFIRMARY, Harts-Stoke-on-Trent.—The New Infirmary, opened in , is built on the pavilion plan, has accommodation about 346 patients, including Children's wards, a Bacteriological and Pathological department, and a department for the treatment of Diseases of the Eye, X Ray and Electrical department (including Ultra-Violet Ray Lamps); Cardiographic department, a department for the treatment of Diseases of the Ear, Nose, and Throat, an Orthopædic department, an Electrocardiograph department, and Venereal Diseases clinics; so that there are excellent facilities for acquiring a practical knowledge of the profession. During the last four years the sum of £170,000 has been spent on new buildings and alterations. The extensions comprise a new ward block also containing new X Ray and Orthopædic departments with connecting corridors to the existing Infirmary, large extensions to the nurses' home, a new boiler house, new chimney stack, and a new laundry. The whole institution is now equipped thoroughly. Secretary and House Governor: Mr. W. Stevenson.

NOTTINGHAM GENERAL HOSPITAL.—There are at this hospital 357 beds available for medical and surgical patients, and 54 beds are in the detached branch known as "The Cedars" Branch of the General Hospital. The Medical and Surgical Staffs consist of 1 Honorary Consulting Physician, 2 Honorary Consulting Surgeons, 1 Honorary Consulting Physician in Venereal Diseases, 3 Honorary Physicians, 4 Honorary Surgeons, 2 Honorary Assistant Physicians, 2 Honorary Assistant Surgeons, 2 Honorary Aural Surgeons, 1 Honorary Dermatologist, 2 Honorary Anæsthetists, 2 Honorary Assistant Anæsthetists, 1 Honorary Surgeon Dentist, 1 Honorary Medical Officer in Charge of X Ray and Electrotherapeutic department, and 1 Pathologist. The Resident Medical Staff consists of 2 House Physicians, 4 House Surgeons, 1 Aural House Surgeon, and 1 Casualty Officer. The special departments are the Ear, Nose and Throat, Skin, Dental, Massage and Exercise, X Ray, Orthopædic, Electrotherapeutic, Ultra-Violet Light. House Governor and Secretary: Mr. P. M. MacColl.

ROYAL BERKSHIRE HOSPITAL, Reading.—This hospital, which contains 237 beds, was enlarged in 1912, and includes an Out-patient Department, a Casualty Department, an X Ray Department, Electrotherapeutic and Massage Department, an Orthopædic Department, a V.D. Clinic, a Laboratory, an Eye Theatre, Eye Wards, a Maternity Ward, and two Motor and one Horse ambulances. The hospital is approved by the General Nursing Council as a Training School for Nurses. Post-graduate Lectures are given, and by the Ministry of Health for V.D. Treatment.

ROYAL DEVON AND EXETER HOSPITAL, Exeter.—The hospital contains 225 beds (including special children's wards) and has a good library, museum-post-mortem room, and pathological laboratory. Attendance on the practice of this hospital qualifies for all the examining boards. There is also a Private Nursing Staff attached to the hospital. For particulars as to fees, &c., apply to the Matron. A new wing was added in 1897 and the "Victory" wing for the treatment of discharged disabled soldiers and sailors completed and opened in 1922. Arrangements may be made by which gentlemen in practice desiring to increase their qualifications may have the use of the museum and library and other facilities and by which students may attend midwifery. A new Operating Theatre was opened in 1906 (the gift of Mrs. Nosworthy of Dawlish, Devon). The Electrical Treatment Department (the gift of Mrs. M. A. Sanders) was opened in 1907 by Lady Duckworth-King. This department was enlarged in 1925 to meet the ever-increasing work, and now forms one of the most important sections of the hospital. A department was opened in 1917 for the treatment of genito-urinary diseases; there are three sessions per week, two for men at 3 P.M. and 7 P.M., and one for women at 3 P.M.

ROYAL HANTS COUNTY HOSPITAL, Winchester.—158 civilian beds. Secretary: Mr. Herbert Maslen.

ROYAL HOSPITAL, Portsmouth.—180 beds. There are X Ray and Massage Departments.

ROYAL SALOP INFIRMARY, Shrewsbury.—This hospital has 150 beds. In-patients, 1565; out-patients, 1448; out-patients' attendances, 21,387; accidents and casualties, 3540; dental cases, 288. Secretary-Superintendent: J. W. Noble. A New Wing for the reception of Women and Children, capable of accommodating some 40 patients, has now been erected.

ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL, Southampton.—This hospital contains 130 beds, but will be increased to 214 beds within the next few months, with every facility for clinical instruction. Special Departments: Ear, Nose, and Throat; X Ray; Massage and Electricity; Ultra-Violet Ray; Venereal Diseases. Large Out-patient Department.

ROYAL SUSSEX COUNTY HOSPITAL, Brighton (225 beds).—This hospital affords ample facilities for students, possessing a large out-patient department, including Ophthalmic, Dental, Dermatological, Gynæcological, X Ray, and Orthopædic sections, and a well-appointed clinical research and bacteriological department. The hospital does not take resident pupils, but out-pupils may attend the practice of the hospital for any period not exceeding two years, on payment in advance of a fee, not exceeding 20 guineas, as the Board of Management shall direct.

SALISBURY GENERAL INFIRMARY, Salisbury.—This hospital contains 142 beds. Maternity and antenatal and ophthalmic wards; maternity and child welfare clinic.

SOUTH DEVON AND EAST CORNWALL HOSPITAL, Plymouth.—This hospital has 185 beds (including 10 for venereal diseases in a separate building). Special departments include Pathological, X Ray, Deep-Therapy, Cardiographic, Ultra-Violet Rays, Electrotherapeutic, and Orthopædic; also medical and surgical out-patients. Pensioners are received as in-patients, and are also treated as out-patients.

STAFFORDSHIRE GENERAL INFIRMARY, Stafford (established 1766).—This hospital has 100 beds.

WEST OF ENGLAND EYE INFIRMARY, Exeter.—64 beds. Students of the Exeter Hospital can attend the practice of the Eye Infirmary. A ward is set aside for newly-born babies suffering from infectious eye diseases. Mothers with babies are accommodated.

WOLVERHAMPTON AND STAFFORDSHIRE HOSPITAL, Wolverhampton (210 beds).—Special departments for Children, Infectious cases, Gynæcology, Ear, Throat, and Nose Diseases, Electrotherapeutic and X Rays, Orthopædics, Artificial Sunlight, Venereal Disease, Pathological Laboratory, Dentistry, and Electrocardiographic Installation. There is an excellent library. The resident officers are a resident surgical officer, resident medical officer, two house surgeons, and resident anæsthetist. Pupils are allowed to witness the whole of the practice of the hospital and to be present at operations and have every opportunity of acquiring a practical knowledge of their profession. A course of Practical Pharmacy is given by the dispenser. Fees on application. Applications should be made to the Honorary Secretary of the Medical Committee.

WORCESTER GENERAL INFIRMARY, Worcester.—This hospital has 132 beds. Pupils are taken by members of the Honorary Medical and Surgical Staff. New X Ray and Electrical and Wolfram Arc Light, Ear, Nose and Throat, and Orthopædic Departments have been erected and are now in use. Additional accommodation for the Honorary Staff and Out-patients and also an Outdoor Shelter in connexion with the Children's Ward have been built as a memorial to King Edward VII., and fire-escape staircases erected.

YORK COUNTY HOSPITAL, York.—This hospital contains 180 beds. There are balconies for outdoor treatment, two installations of X ray apparatus, electrotherapeutic and massage department, actino-therapy installation, Zünd-Burguet apparatus treatment of chronic deafness, and clinical labora A Venereal Diseases Clinic is held.

These hospitals vary much in size and scope, obviously offer, for reasons of geography, n separate appeals, so that no detailed informa upon any particular points in reference to particular institution would be of service to any group of students. It is unnecessary to point to the general practitioners in the neighbour the advantages to be obtained from the post-grad facilities offered to them by the hospital in midst, and it is gratifying to know that a far v use is being made of these facilities than was form the case.

Medical students completing their curriculun attendance at authorised courses in these hosp must ascertain, by communication with the Secre information concerning fees and other details.

II.—SCOTLAND.

THE UNIVERSITIES.

UNIVERSITY OF EDINBURGH.

Four Degrees in Medicine and Surgery are conf by the University of Edinburgh—viz., *M Ch.B.*, *M.D.*, and *Ch.M.* The degree of *C* shall not be conferred on any person who does n the same time obtain the degree of *M.B.*, and degree of *M.B.* shall not be conferred on any p who does not at the same time obtain the d of *Ch.B.* No one is admitted to the degrees wh not been engaged in Medical and Surgical stud five years

Candidates for the degrees of M.B. and Ch.B. have attended for at least three academic year medical and surgical practice either of the Royal mary, Edinburgh, or of a general hospital elsew which accommodates not fewer than 80 patients possesses a distinct staff of physicians and surg They must have attended courses of instructio Clinical Surgery and Clinical Medicine each of months, and courses of instruction in all subsidiary subjects. They must have attend course of instruction in Clinical and Pra Midwifery and have personally conducted 12 of labour.

With respect to the places and institutions at w the studies of the candidate may be prosecute following regulations have effect:—Three of th years of medical study must be spent in the Unive of Edinburgh. The remaining two years ma spent in any University of the United Kingdom, any Indian, Colonial, or Foreign University recog for the purpose by the University Court, or in medical schools or under such teachers as ma recognised for the purpose by the Unive Court.

Women are admitted to graduation in medi under the same conditions as men.

Bachelors of Medicine and *Bachelors of Surgery* proceed to the degrees of *Doctor of Medicine* and *M of Surgery* after they have spent one year in the me or surgical wards respectively of a hospital, o Military or Naval Medical Services, or in scientific bearing directly on their profession, or two yea practice. In each case an examination mus passed and a thesis submitted for approval o Faculty.

Post-graduate Instruction.—The University t part in the Courses given under the auspices o Edinburgh Post-graduate Courses in Medicine. the departments of the Faculty of Medicine prov is made for research by students of graduate stan In the University laboratories facilities will be vided for candidates for the Degree of Ph.D. w

ications to engage in research have been accepted he Senatus.

n connexion with the University and Royal eges Post-graduate Instruction is given each year, fly in the Summer Vacation (July–September). cial Courses are arranged for, and particulars may ad on application to the Hon. Secretary, Post-luate Courses in Medicine, University New dings, Edinburgh.

he University of Edinburgh is especially rich in larships and prizes in medical subjects. Full iculars concerning these, as well as concerning fees at different stages, can be obtained from the n of the Medical Faculty.

OYAL INFIRMARY, Edinburgh.—994 beds, including cots for children. The clinical work of the nburgh student is done at the Royal Infirmary. rses of Clinical Medicine and Surgery are given the physicians and surgeons to male and female lents. Special instruction is given on Diseases Women, Physical Diagnosis, Diseases of the n, Diseases of the Eye, the Ear, the Larynx, the Teeth. Separate wards are devoted to ereal Diseases, Diseases of Women, Diseases of Eye, the Ear, Throat and Nose, and the Skin, also to cases of Incidental Delirium or Insanity. re is also a large and complete Radiological artment. Post-mortem examinations are con-ed in the anatomical theatre by the pathologist his assistants, who also give practical instruction 'athological Anatomy and Histology.

he appointments are: 1. Resident physicians surgeons are appointed and live in the house free harge. The appointment is for six months, but be renewed at the end of that period by special mmendation. 2. Non-resident house physicians surgeons and clinical assistants are appointed for months. The appointment may be renewed for a period by special recommendation. 3. Clerks and sers are appointed by the physicians and surgeons. se appointments are open to all students junior practitioners holding hospital tickets. assistants in the Pathological Department.

acilities are given in connexion with the Post-luate Courses arranged by the Edinburgh Univer-and the two Royal Colleges jointly.

OYAL HOSPITAL FOR SICK CHILDREN, Sciennes-, Edinburgh.—120 beds, and fitted with every ern improvement. A fully equipped out-patient rtment (medical and surgical) is conducted y. Systematic courses of instruction, which qualify graduation in the Edinburgh University and where, are given thrice throughout the year by staff. Each course consists of 50 meetings and bines medicine and surgery. Post-graduate ses of Lectures are held during the summer tion. Full particulars with regard to teaching be obtained from the Dean's office, University Buildings, Edinburgh.

YE, EAR, AND THROAT INFIRMARY OF EDIN-RGH (with which is incorporated the Edinburgh Dispensary), 6, Cambridge-street, Lothian-road.—ical Lectures and Instruction are given in this stution, which is open at 1 o'clock daily for out-patients for Eye Diseases; Mondays, Thursdays, Saturdays at 12 noon, and Tuesdays and Fridays P.M. for outdoor Ear, Nose, and Throat Patients. ents whose diseases require operations or extra are accommodated in the house (10 beds). tical Ophthalmoscopic Classes may be arranged, Clinical Assistants are appointed from time to . A Post-graduate Course in Diseases of the Ear, , and Throat is held each academic term, com-ing in May, October and January, and continuing six weeks. The next course commences in ber. The class meets at 5 P.M. on Tuesdays Fridays, and the instruction, which is practical, pplemented by lantern demonstrations. Full culars from the Secretary, 32, Charlotte-square.

UNIVERSITY OF GLASGOW.

The University of Glasgow is both a teaching and a degree-granting body, but admits to graduation only candidates whose preliminary examination and course of study conform to its own regulations. Within certain limits instruction given by recognised medical schools and teachers may be accepted, but not less than one-half of the subjects other than clinical must be taken in this or some other recognised university, and at least two years of the course must be taken in Glasgow University. Seven degrees, open both to men and women, are conferred: *M.B.* and *Ch.B.* (always conjointly), *M.D.* and *Ch.M.*; *B.Sc.* in Public Health; *D.Sc.* in Public Health; *B.Sc.* in Pharmacy; and *Ph.D.* in the Faculty of Medicine. A Diploma in Public Health (*D.P.H.*) is also granted.

All information as regards the extent and standard of the Preliminary Examination may be obtained by application to the Secretary, Scottish Universities Entrance Board, 81, North-street, St. Andrews.

For the degrees of M.B. and Ch.B. a curriculum of five years is required. The candidate must attend a course or courses of instruction in each of the following subjects of study, extending over not less than the number of terms specified in each case, and including such class examinations as may be prescribed in connexion with the several courses:—Chemistry (including Organic Chemistry), two terms; with Practical Chemistry, one term; Physics (with practical work), one term; Botany (with practical work), one term; Zoology (with practical work), one term; Anatomy and Practical Anatomy, five terms; Physiology and Practical Physiology, three terms; Materia Medica and Therapeutics (together or separately), each subject, one term; Pathology and Practical Pathology, three terms; Medical Jurisprudence and Public Health (together or separately), each subject, one term; Midwifery and Diseases peculiar to Women and to Infants, two terms; Surgery, two terms; Medicine, two terms. Candidates must attend for at least three years the Medical and Surgical Practice of a recognised hospital accommodating at least 80 patients and having a distinct staff of physicians and surgeons. At least nine months' hospital attendance is required on both Clinical Surgery and Clinical Medicine with nine months more of general hospital practice; the student must have acted for six months as clerk in medical and dresser in surgical wards, and must have had six months' outdoor practice; he must also have attended a course of Mental Diseases and of Practical Pharmacy (25 meetings), must have been properly instructed in Vaccination at a public vaccination station, and must have attended at least 20 cases of labour and the Practice of a Lying-in Hospital. The University also requires further study in various special subjects: Ophthalmology, Diseases of the Ear, Diseases of the Throat and Nose, Venereal Diseases, Tuberculosis, Fevers, Vaccination. The final year consists of three intensive terms of study one devoted to Midwifery and Diseases of Women, one to Surgery, and one to Medicine.

There are four Professional Examinations, the first comprising Botany, Zoology, Physics, and Chemistry; the second comprising Anatomy and Physiology; the third comprising Materia Medica and Therapeutics and Pathology; and the fourth or final, comprising Medical Jurisprudence and Public Health, Surgery and Clinical Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and the Diseases Peculiar to Women and to Infants.

The degrees of M.D. (Doctor of Medicine) and Ch.M. (Master of Surgery) are granted to candidates, not under 24 years of age, who have previously obtained the double bachelorship on completing examinations, in Clinical Medicine for M.D. and in Surgical Anatomy, operations on the dead body, and Clinical Surgery for Ch.M. The higher degree of Doctor of Philosophy (Ph.D.) is also conferred in the Faculty of Medicine. Candidates must already have obtained a degree (or

equivalent diploma) from an approved University or College and must prosecute a course of special study or research for two or three years and given evidence of satisfactory progress. A thesis must be presented for approval by the Senate on the recommendation of a Special Committee. The candidate may be required to undergo an oral or other examination on the subject matter of the thesis.

Post-graduate Medical Teaching is available under the auspices of Glasgow Post-Graduate Medical Association, which is representative of practically all the Teaching Institutions in Glasgow. Weekly demonstrations for practitioners are given throughout the winter and spring, and comprehensive courses of instruction during the summer and autumn. There is a General Medical and Surgical Course during the last two weeks of August and the first two weeks of September. This is a whole-time course and includes most of the subjects of interest to the general practitioner. The forenoons are occupied with General Medicine and Surgical Diagnosis and Minor Surgery in the Royal Infirmary and in the Victoria Infirmary. In the afternoons special subjects are dealt with in some of the special hospitals or in the special departments of the general hospitals—two subjects each afternoon. On the four Saturday forenoons Tuberculosis and Infectious Fevers are demonstrated at Ruchill Fever Hospital. Arrangements have also been made whereby a limited number of graduates may become attached to wards or out-patient departments nominally as clinical assistants for definite periods throughout the year. As such they work under the direct supervision of the physician or surgeon in charge, and carry out such detailed investigations as directed. Further information may be obtained from the Secretary of the Association, 9, Woodside-terrace, Glasgow.

The great majority of the students take their hospital course at the Western, Royal, and Victoria Infirmaries, and at the district hospitals of Glasgow Parish Council, where clinical instruction is given by professors of the University and others. Clinical instruction on Fevers is given at Ruchill and Belvidere Hospitals, while special courses, largely of a practical nature and embracing work in Hospital or Asylum wards, are conducted by University Lecturers on the Ear, the Throat and Nose, Dermatology, Ophthalmology, Venereal Diseases, Tuberculosis, Insanity, and Electro-diagnosis and Therapeutics.

ROYAL INFIRMARY, Glasgow.—The ancient connexion between the University of Glasgow and the Royal Infirmary was revived in 1911, when four University Chairs and several University Lectureships were established at the Infirmary. New Lectureships in Materia Medica and Pathological Biochemistry were established recently, and this year a lectureship in Bacteriology has been founded. St. Mungo's College which embraces and continues the original Royal Infirmary Medical School, is situated in the infirmary grounds. The infirmary has, including the Ophthalmic Department, over 800 beds. There are special wards for diseases of women, of the throat, nose, and ear, skin, eye, burns, septic cases, and biochemical investigation. The wards are open to Women Students. In addition to the large medical and surgical departments, there are departments for special diseases—viz., diseases of women, of the throat and nose, of the ear, of the eye, of the skin, and of the teeth. Five house physicians and ten house surgeons, who board in the hospital free of charge, are appointed every six months; also five non-resident house physicians, eight non-resident house surgeons, and one non-resident dental house surgeon. Clerks and dresses are appointed by the physicians and surgeons. As a large number of cases of acute diseases and accidents of a varied character are received, these appointments are very valuable and desirable. There is a modern and fully equipped Electrical Pavilion and Massage Department, and year by year the latest and most approved apparatus for diagnosis and treatment has been added. Post-graduate Cla are held during August and September in Cli Medicine, Clinical Surgery, Clinical Gynæcol Diseases of the Skin, Biochemistry, Diseases of Throat, Nose and Ear, and in Diseases of the Tutorial Classes for senior students are also in August and September.

For information regarding fees and other particu application should be made to the Superintendent

GLASGOW WESTERN INFIRMARY.—This hospita 600 beds adjoins the University. Special wards set apart for Diseases of Women, Throat, Nose, Ear, and for Affections of the Skin. In the out-pat department there are special clinics for Disease Women and for Diseases of the Throat, Ear, Te Skin, Venereal Disease, and Electrotherapeutics. Clinical Courses are given by the physicians and geons, each of whom conducts a separate class, students require to enter their names at the begin of the session for the class which they propos attend. Special instruction is given to junior stud by tutors or assistants, and clinical clerks and dres are selected from the members of the class. All courses of clinical instruction are recognised by University of Glasgow and the other boards the kingdom. In the Pathological and Bacteriolo Departments the courses are both systematic practical, and extend through the winter and fol ing summer; these are likewise recognised by University for graduation. In addition Post-grad Courses are held. Eighteen resident assistants appointed annually, without salary, from those have completed their course. In the Clinical Lab tory students receive laboratory instruction from lecturer on clinical methods. A School of Mass Medical Electricity, and Swedish Remedial Exer has been established to qualify for the Certifica the Chartered Society of Massage and Me Gymnastics. Secretary: J. Matheson Johnston, 87, Union-street.

VICTORIA INFIRMARY, 67, Carlton-place, Glasgo This institution, which has 380 beds, is the thir the extensive general hospitals in Glasgow to a opportunity for clinical instruction to students. addition to a full general staff there is a cli research laboratory with pathologists and bact logists attached, radiological and dental instruc and a full assortment of specialists. The Bellahou Dispensary, also with a clinical staff, is conduct connexion with the Victoria Infirmary. For fu particulars of the clinical practice application sh be made to the Secretary and Treasurer, Mr. Joh Robson.

THE ANDERSON COLLEGE OF MEDICINE, Dumba road, Glasgow, W.1.—Courses are given which qu for all the licensing boards and for the Universiti Oxford, Cambridge, London, Durham, Edinbu and Glasgow (the latter two under certain conditi Extensive accommodation is provided for Prac Anatomy, Practical Chemistry, Practical Bo Practical Zoology, Practical Physiology, Prac Pharmacy, Operative Surgery, and Public He Ample provision has also been made for the co of students. Women students are admitted o same terms as men, and the Carnegie Trust ex its benefactions to students of the College. particulars may be obtained from the Carnegie Offices, Merchants' Hall, Edinburgh.)

Candidates for the L.D.S. can obtain the medical curriculum in Anatomy, Chemistry, Ph logy, Surgery, Practice of Medicine, and Ma Medica. The courses special to Dentistry are ducted at the Dental Hospital, Glasgow.

Communications relating to the College t addressed to the Secretary of the Medical Fac Communications relating to the Preliminary Exa tion in General Education to be addressed t Educational Institute Office, 47, Moray-place, burgh; and relating to the Triple Qualificatio to the Dental Qualification to be addressed to Faculty Hall, 242, St. Vincent-street, Glasgow.

UEEN MARGARET COLLEGE (Women's Department he University).—This is an integral part of the versity of Glasgow. The classes are taught by essors of the University and other lecturers ointed by the University Court, and it is governed he University Court and Senate. The curricula, lations, and fees are the same as those of the male lents, and the University degrees are open to nen on the same conditions as to men. The ol of medicine is a special feature of the College, gives full preparation for the medical degrees of University. The women students attend classes he various University Buildings at Gilmorehill Queen Margaret College, the Royal Infirmary, Western Infirmary, and the Victoria Infirmary. lities for clinical work are given in the Royal, tern and Victoria Infirmaries, in the Maternity, al Sick Children's, and other hospitals. The nur Scholarship is open every third year to students rst year; other Bursaries are open in Arts and icine, and women are admitted to certain versity bursaries and fellowships.

T. MUNGO'S COLLEGE AND GLASGOW ROYAL RMARY.—The classes in St. Mungo's College ify for the medical qualifications of the English, ch, and Irish Conjoint Boards, for the dental omas of the English, Irish, and Scottish Boards under certain conditions, for the various ersities, including the University of London. lents who have fulfilled the conditions of the egie Trust are eligible for the benefits of this st during the whole course of their studies at Mungo's College.

urther particulars can be obtained from a abus which may be procured free on application he Secretary of the Medical Faculty, 86, Castle-et, Glasgow.

OYAL HOSPITAL FOR SICK CHILDREN, St. Vincent-et, Glasgow.—This institution consists of: (1) a ital at Yorkhill containing 275 cots, built on an ated and central site close to the University, and ed in July, 1914; (2) a Dispensary, or Out-ent Department, in West Graham-street, opened October, 1888; and (3) a country branch at mchapel, Dumbartonshire, containing 30 cots, ed in 1903. Children treated must not be over ears of age, nor suffer from infectious diseases. 1927 there were 7143 patients treated in the ls, and the number of attendances of out-patients 83,591. There are one professorship and three ureships in the University of Glasgow in connexion the hospital, one professorship and one lecture-on the Medical Diseases of Infancy and Childhood, lectureship on Surgery and Orthopædics in tion to Infancy and Childhood, and one lectureship io-chemistry in relation to Infancy and Childhood. lectures are both systematic and clinical, but icularly and chiefly the latter. In addition special ities are given for post-graduate study.

ll information may be obtained from the Medical erintendent.

LASGOW ROYAL MATERNITY AND WOMEN'S PITAL, Rottenrow.—114 beds. A Maternity and d Welfare Centre has been established consisting a complete In-door and Out-door Antenatal artment and an Infant Consultation Clinic. A research laboratory is now open. Full par-ars as to fees and accommodation may be ined from the House Superintendent at the ital.

OYAL SAMARITAN HOSPITAL FOR WOMEN, Glasgow. eased to 160 beds by building extensions pleted in 1927. It offers excellent facilities for cal instruction in the diseases peculiar to women. ures and clinical demonstrations are given by bers of the surgical staff to students and to post-uates; and the hospital is represented on the rd of the Glasgow Post-Graduate Medical Associa-tion formed for coördinating post-graduate medical teaching in all the hospitals. The Royal Samaritan Lectureship in Gynæcology is a University Lectureship associated with the Hospital.

For further information, application may be made at the Hospital, or to the Secretary, 149, St. Vincent-street, Glasgow.

GLASGOW LOCK HOSPITAL, 41, Rottenrow, Glasgow. Contains 80 beds for the treatment of females suffering from Venereal Diseases. There is also a Labour Ward, and a well-equipped Dispensary for out-patient attendances. There is a Lecture Room and a Laboratory, equipped with modern appliances, where University classes on the subject are dealt with. Post-graduate classes are also held. Recently the hospital has been completely renovated and modernised. Full information from the Secretary and Treasurer, Mr. J. Neilson Gray, LL.B., 65, Bath-street, Glasgow.

GLASGOW OPHTHALMIC INSTITUTION, 126, West Regent-street, and 131, Wellington-street (30 beds and six cots).—This institution is administered by the Royal Infirmary. Clinical and systematic courses of lectures for students during the winter and summer sessions. Operations on Wednesdays and Fridays. Post-graduate classes and demonstrations are arranged during the summer. Secretary and Cashier: R. Morrison Smith, C.A., 135, Buchanan-street, Glasgow.

GLASGOW EYE INFIRMARY, Berkeley-street and Charlotte-street.—The wards and dispensary are recognised by the University of Glasgow for the purpose of instruction in ophthalmology for graduation in medicine, and by the Royal Colleges of Physicians and Surgeons of England for the Diploma in Ophthalmic Medicine and Surgery. A Venereal Centre has been established, and a Branch Dispensary has been opened in Clydebank. Post-graduate Classes are held. Secretary and Acting Treasurer, Mr. Harold John Black, 171, West Regent-street, Glasgow.

GLASGOW EAR, NOSE, AND THROAT HOSPITAL, 306, St. Vincent-street (52 beds).—At out-patient and in-door departments clinical instruction is given. Post-graduate Courses are held during the year. Secretary: D. N. Mackay, 144, St. Vincent-street, Glasgow.

UNIVERSITY OF ST. ANDREWS (UNITED COLLEGE ST. ANDREWS AND UNIVERSITY COLLEGE, DUNDEE).

Four Degrees in Medicine and Surgery are conferred by the University of St. Andrews—viz., *M.B.*, *Ch.B.*, *M.D.*, *Ch.M.*, a Diploma in Public Health, and Diploma in Dental Surgery (*L.D.S.*).

The extent and standard of the Preliminary Examination is determined by the Scottish Universities Entrance Board constituted under Ordinance No. 70 of the Scottish University Courts (General No. 3—Regulations as to Admission to the Scottish Universities for purposes of graduation), in accordance with the terms of that Ordinance. A degree in Arts or in Science in any of the Universities of the United Kingdom and in some colonial and foreign universities exempts. The Preliminary Examination for graduation in Medicine and Surgery, Arts or Science, of the University of St. Andrews is accepted as equivalent to the Registration Examination required by the General Medical Council (the certificate to include the required subjects). Also the Final Examination for a degree in Arts or Science.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—A pre-registration examination is held in Physics and Chemistry. Candidates must have been engaged in medical study for at least five years after registering as a medical student. In each of the first four years the candidate must have attended at least two courses of instruction in one or more of the

subjects of study specified below, each course extending over a session of not less than five months, either continuous or divided into two terms, or, alternatively, one such course along with two courses, each extending over a session of not less than two and a half months. During the fifth or final year the candidate shall be engaged in clinical study for at least nine months at the Infirmary of Dundee or at one or more of such public hospitals or dispensaries, British or foreign, as may be recognised for the purpose by the University Court. The candidate must have received instruction in each of the following subjects of study, including such examinations as may be prescribed in the various classes—viz., Anatomy, Practical Anatomy, Chemistry, Materia Medica, Physiology, or Institutes of Medicine, Practice of Medicine, Surgery, Midwifery and the Diseases peculiar to Women and Infants, Pathology, Bacteriology, Practical Chemistry, Physics, Elementary Botany, Elementary Zoology, Practical Physiology, Practical Pathology, Forensic Medicine, and Public Health. The candidate must have attended for at least three years the Medical and Surgical Practice either of the Infirmary of Dundee or of a General Hospital elsewhere with not fewer than 80 patients, with a distinct staff of physicians and surgeons, and recognised for the purpose by the University Court. Additional subjects of study are Practical Pharmacy, Mental Diseases, Practical Midwifery, Operative Surgery, Vaccination, Children's Diseases, Fevers, Ophthalmology, Diseases of the Ear, Throat, and Nose, Anæsthetics, Dermatology, and Post-mortem Examinations.

With respect to the places and institutions at which the studies of the candidate may be prosecuted the following regulations shall have effect:—1. Two of the five years of medical study must be spent in the University of St. Andrews. 2. The remaining three years may be spent in any University of the United Kingdom or in any Indian, Colonial, or Foreign University recognised for the purpose by the University Court, or in such medical schools or under such teachers as may be recognised for the purpose by the University Court. Women are admitted to graduation in Medicine, subject to certain provisions.

Professional Examinations for the Degrees of Bachelor of Medicine and Bachelor of Surgery.—Each candidate will be examined both in writing and orally, and also clinically where the nature of the subject admits, in the following divisions—viz., first, in Botany, Zoology, Physics, and Chemistry; second, in Anatomy and Physiology; third, in Materia Medica, Pathology and Bacteriology, Forensic Medicine and Public Health; and fourth, in Surgery, Clinical and Operative Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and Gynæcology (Systematic and Clinical).

UNIVERSITY COLLEGE, DUNDEE.—The Medical School in St. Andrews University is carried on as follows: In the case of St. Andrews tuition is given only for the first two years, up to and including Physiology and Anatomy. There are no facilities in St. Andrews for clinical studies, but a complete course is given in Dundee from the beginning to the end of the curriculum. Thus it is possible for a student to take his first two years of the curriculum in St. Andrews, transfer to Dundee and complete his course there, or take all his course in Dundee. In either case, the entire curriculum is still in the University. As regards "conjoint medical school," this term seems to refer to the point that in the United College, Dundee, which originally was not an integral part of the University, there was provision made for teaching the first two years of the medical curriculum. Subsequently, Dundee College was affiliated and these original Dundee chairs were included, but the administration of the funds is still retained by the Governors of the United College, Dundee. The remaining chairs in Dundee are financed by the University of St. Andrews. Both the Dundee professors and the St. Andrews professors in Dundee teach in a common building.

ROYAL INFIRMARY, Dundee (461 beds).—In addit to the ordinary Medical and Surgical Wards, there special departments for Midwifery (In- and Out-do for Diseases of Women, of Children, of the Eye, of Ear, Nose, and Throat, and of the Skin; and Clinical Pathology, Radiology, Electrotherapeu and Electrocardiography. An extension provid for a new X Ray Department and Massage Dep ment and for additional Operation Theatre acc modation has been opened recently, a new Mater Department is being built at a cost of £32,000, a new Dispensary at a cost of £25,000. Clin teaching is given to male and female students the Honorary Staff; post-mortem examinations conducted by the pathologists. All courses instruction are recognised by the University of Andrews and the other Universities and Boa of the United Kingdom. Ten Resident Med Officers are appointed every six months. Clin clerks and dressers are attached to the Physici and Surgeons; and Students are appointed assistants in the pathological department. Furt information may be obtained from the Med Superintendent.

UNIVERSITY OF ABERDEEN.

The University of Aberdeen grants four degrees Medicine and Surgery—viz., *M.D.*, *Ch.M.*, *M.B.*, *Ch.B.* The Degree of Doctor of Philosophy (*Ph.* is also granted in the Faculty of Medicine.

Degrees of M.B. and Ch.B.—Candidates, bef entering on the curriculum, must have passed Preliminary Examination or hold a qualificat recognised as exempting from such examinati have attained the age of 17, and have passed Pre-registration Examination in Physics Chemistry.

The curriculum for the degrees extends ove period of five years, during which attendance required in the following subjects: Botany, Zoolo Physics, Chemistry (Systematic and Practic Anatomy (Systematic and Practical), Physiol (Systematic and Practical), Materia Medica Therapeutics, Practical Pharmacy, Pathology (S tematic and Practical), Medical Jurisprudence, Pu Health, Surgery, Medicine, and Midwifery.

Candidates must attend for at least three years medical and surgical practice of a recognised hospit they must have attended courses of at least n months in clinical medicine and clinical surge and have acted as clerk in the medical and dresse the surgical wards of a hospital. Attendance required on the practice of a dispensary or the c practice of a hospital and also on courses in Me Diseases, Fevers, Ophthalmology, Post-mortem Exa nations, Venereal Diseases, Tuberculosis, Radiol X Ray, Therapeutics and Electrical Treatment, Clinical Chemistry, and other special subjects. candidate is also required to have been prop instructed in Vaccination and to have attended least 20 Midwifery cases.

Degrees of M.D. and Ch.M.—Candidates for eit of these degrees must already hold the degrees M.B. and Ch.B. of Aberdeen. A thesis (in duplic has to be presented and an examination has to passed in Clinical Medicine (or in some spe Department of Medical Science) or Clinical Surg as the case may be.

Degree of Ph.D.—For this degree candid must pursue a course of special study or rese during a period of nine academical terms as Rese Students in the University of Aberdeen or in College or Institution that may be affiliated ther A Thesis (in duplicate) must be presented for appro

A diploma in Public Health is granted by University to graduates in Medicine of a Univer in the United Kingdom, after a special examinat

Scholarships and Prizes.—In the Faculty of Medi of the University of Aberdeen there are the follow Bursaries, Scholarships, and Prizes:—Bursar about 15 Bursaries (competition and presentati

open each year, of £15 to £30 per annum in value, st of them being tenable for three years. Scholar-os: five Post-graduate Scholarships, value £36 £160 per annum. Prizes and Medals: 15 Gold dals and Prizes for proficiency in special depart-nts.

ABERDEEN ROYAL INFIRMARY (366 beds).—The n clinical work of the students is done in the rmary with its general and special facilities, uding a Department of Clinical Chemistry.

ABERDEEN ROYAL MENTAL HOSPITAL.—This hos-l contains, with hospital attached to main institu-n and agricultural branch, about 950 beds. Clinical ruction is given to students during three nths in summer. Physician-Superintendent, Dr. Dods Brown.

OTHER HOSPITALS.—Students have the opportunity attending the following institutions: City Fever spital, Sick Children's Hospital, General Dispensary, ng-in and Vaccine Institutions, and Ophthalmic itution.

SCOTTISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

YAL COLLEGE OF PHYSICIANS OF EDIN-URGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

These Colleges have made arrangements by which, r one series of examinations, held in Edinburgh or sgow, or both, the student may obtain the diplomas the three bodies. This is the Scottish Conjoint rd.

The three bodies grant their Single Licences only to didates who already possess legal qualifications in licine or Surgery.

The hospitals which are recognised by the Scottish joint Board as places where professional study for ir diplomas can be pursued are all those institutions ch feed the medical faculties of the universities, well as all the places which are recognised by English and Irish Conjoint Boards.

Professional Education.—The candidate must pro-e certificates or other satisfactory evidence of ing attended the following separate and distinct rses of instruction: Physics, three months; mentary Biology, three months; Chemistry, six nths; Practical or Analytical Chemistry, three nths; Anatomy, during at least six months; ctical Anatomy, twelve months; Physiology, months; Practical Physiology, three months; eria Medica, three months; Pathology (including ctical Pathology), nine months; Practice of licine, six months; Clinical Medicine, nine months; ciples and Practice of Surgery, six months; ical Surgery, nine months; Midwifery, three nths; Gynæcology, one course of not less than 13 tings; Diseases of Children, one course of not less n 13 meetings; Medical Jurisprudence and Public lth, three months. The certified attendance on es, demonstrations, and practical work must not less than three-fourths of the total number of -calls. Every student undergoes a course of ctical Midwifery, but before attending at labours s required to attend a course of lectures on Surgery Midwifery and to hold the offices of Clinical lical Clerk and Surgical Dresser. He must also nd for two and a half months' instruction in ctical Pharmacy; the certificate to be signed by teacher, who must be a member of the Pharma-tical Society of Great Britain, or the superintendent he laboratory of a public hospital or dispensary, or gistered practitioner who dispenses medicines to patients, or a teacher of Practical Pharmacy.

The student must attend for 27 months the Medical and Surgical practice of a public general hospital containing on an average at least 80 patients available for clinical instruction, and possessing distinct staffs of physicians and of surgeons. He must act as Surgical Dresser and Medical Clinical Clerk for not less than six months in the wards in each case, and receive practical instruction in administration of anæsthetics. He must attend for six months the practice of a public dispensary especially recognised by any of the above authorities, or the out-patient practice of a recognised general hospital. This attendance should be made after the student has passed the First and Second examinations.

Candidates are also required to attend the following courses: Diseases and Injuries of the Eye, three months; Insanity, three months; Infectious Diseases, three months; Gynæcology, three months; Diseases of Children, three months.

The curriculum lasts for five years, the fifth year being devoted to clinical work.

There are four professional examinations:—

First Examination includes Physics, Chemistry, and Elementary Biology.

Second Examination includes Anatomy and Physiology and Histology; and candidates may be admitted to this examination at the end of the second year of medical study.

Third Examination includes Pathology and Materia Medica with Pharmacology.

Final Examination.—The Final Examination shall not be taken earlier than the end of the fifth year of study and shall embrace the following subjects:—Medicine, including Therapeutics, Medical Anatomy, and Clinical Medicine; Surgery, including Surgical Anatomy, Clinical Surgery, and Diseases and Injuries of the Eye; Midwifery and Diseases of Women; and, if not passed previously, Medical Jurisprudence and Public Health; but it is optional to candidates who have passed the Third Examination to be admitted to the subject of Medical Jurisprudence and Public Health on lodging certificates of having attended the necessary course in that subject at any time; but the subjects of Medicine, Surgery, and Midwifery shall be taken together at any time after the end of the fifth Winter Session, provided that a period of 24 months has elapsed since passing the Second Examination. All candidates shall be subjected, in addition to the written and oral examinations, to clinical examinations in Medicine and Surgery, which shall include the Examination of Patients, Physical Diagnosis, the Clinical Use of the Microscope, Examination of the Urine and Urinary Deposits, Surgical Appliances, Bandages, and Surface Markings.

There are four periods of examination annually.

The Registrar in Edinburgh is Mr. D. L. Eadie, 49, Lauriston-place; and the Registrar in Glasgow, Mr. Walter Hurst, 242, St. Vincent-street, to whom fees and certificates must be sent for the respective examinations, and from whom particulars of fees can be obtained.

For students registered with the General Medical Council after Jan. 1st, 1923, more extensive Regulations are in force, and candidates applying for Regulations should state date of registration.

SCHOOL OF MEDICINE OF THE ROYAL COLLEGES, Edinburgh.—The number of students varies much in the classes and subjects. It is within the limit to say that about 1000 students avail themselves each session of the opportunity of attending the school. The lectures qualify for the University of Edinburgh and other Universities, the Royal Colleges of Physicians and Surgeons of London, Edinburgh, and Dublin, the Faculty of Physicians and Surgeons of Glasgow, and other Medical and Surgical and Public Boards. Special courses of instruction for dental students are also included in the curriculum of this school. The practical classes and laboratories will open and the lectures commence on Oct. 2nd. In

accordance with the statutes of the University of Edinburgh one-half of the qualifying classes required for graduation may be attended in this school. The regulations require that the fee for any class taken for graduation in Edinburgh shall be the same as that for the corresponding class in the University. The whole education required for graduation at the University of London may be taken in this school. Post-graduate Courses are conducted in conjunction with the University. Further particulars regarding the school, also its calendar (price 6*d.*) may be had on application to the Dean of the School, Edinburgh.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

In addition to the diplomas granted by the Scottish Conjoint Board the Royal College of Physicians grants its Single Licence to candidates already possessing legal qualifications for professional practice.

The Royal College of Physicians of Edinburgh grants a *Membership* and a *Fellowship*.

Membership.—A candidate, who must be a Licentiate of a British or Irish College of Physicians, or a graduate in medicine of a University, approved by the Council, and 24 years of age, is examined in medicine, therapeutics, and in any branch of the departments of medicine specially professed, such as general pathology, psychology, public health obstetrics, gynæcology, diseases of children, tropical medicine, or medical jurisprudence.

Fellowship.—The Fellows are selected from the ranks of the *Members*.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

The Royal College of Surgeons of Edinburgh admits to the examination for its Single Licence any candidates who hold a Diploma in Medicine of any British, Indian, or Foreign university or of any British College of Physicians, or of the Society of Apothecaries of London or Apothecaries' Hall, Dublin, granted under the provisions of the Medical Act, 1886, whose preliminary examination and course of professional study is proved to be sufficient to fulfil the requirements of the College, or to those who have passed a full examination for any of the above. Female practitioners are admitted to the Licence of the College and also to the Fellowship, and the regulations apply to practitioners of either sex.

The College grants a diploma of Fellowship after examination to the holders of British surgical degrees or diplomas and the holders of recognised degrees of the Universities of Canada, Australia, New Zealand, and the Indian Empire.

The Fellowship.—Candidates must be 25 years of age and in practice for at least two years. The examination is written and viva voce, and includes surgery and surgical anatomy, operative surgery, and clinical practice. One optional subject must also be taken, the range of these specialisms covering nearly every branch of medicine. Candidates are not allowed to appear for more than three times at the examinations. One month's notice of intention to appear for examination must be given by the candidate to the College.

THE ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

The Royal Faculty of Physicians and Surgeons of Glasgow grants a Fellowship and a Licence to be held separately. The Licence is granted as a separate qualification to qualified practitioners in Medicine after examination in surgery, including surgical anatomy and clinical surgery.

Fellowship.—The Fellowship of the Faculty is granted after examination in medicine or surgery, together with an optional subject, which may anatomy or physiology or be selected from any spe branch of medicine or surgery. Fourteen days' no must be given by the candidate to the Facu In certain circumstances Fellows may be elected mark of distinction.

III.—IRELAND.

THE UNIVERSITIES.

UNIVERSITY OF DUBLIN, TRINITY COLLE (SCHOOL OF PHYSIC).

Matriculation.—University students take Entrance of Trinity College and a Junior Freshr Term or a special Medical Preliminary; Ext Students, any examination recognised by the Gen Medical Council.

Pre-registration Examination in Elementary Phy and Chemistry.—Before beginning the five ye Medical curriculum students must pass an exami tion in elementary Physics and Chemistry. T examination is held at the end of September, January, in March, and in June. Courses preparation for it may be taken in the Schoo Physic.

Degrees in Medicine (*M.B.*), *Surgery* (*B.Ch.*), *Midwifery* (*B.A.O.*).—Candidates for these degr must be of B.A. standing and must be for at least academic years on the books of the Medical Sch reckoned from the date of registration. The course may be taken concurrently with the Med course, and the B.A. degree need not be taken be the final medical examinations, but the Medical deg are not conferred without the Arts degree. The lowing courses must be attended:—(1) Lecture Botany, Zoology, Physics and Practical Phys Systematic, Descriptive and Applied Anator Chemistry and Practical Chemistry; Histol Physiology, Practical and Applied Physiology; P tice of Medicine; Midwifery and Gynæcology, Pa logy and Bacteriology; Materia Medica and Th peutics; Medical Jurisprudence and Hygie Surgery and Operative Surgery; (2) three cou of nine months' attendance on the Clinical l tures of Sir Patrick Dun's or other recogn Hospital; (3) Practical Vaccination, one mon instruction; (4) Mental Disease, three mont (5) Practical Midwifery with Clinical Lectu including not less than 20 personally conduc cases, six months; (6) Ophthalmic Surgery, t months. Three groups of examinations have to passed. Preliminary Scientific Examination, inclu Physics and Chemistry, Botany, and Zoology. Intermediate Medical, Part I., including Anato Physiology, and Organic Chemistry; and Part including Applied Anatomy and Applied Phy logy; and the Final Examination, which is divi into Part I., Materia Medica and Therapeu Hygiene and Jurisprudence, Pathology and Bacte logy; and Part II., Medicine, including Clin Medicine and Mental Diseases; Surgery, inclu Operative and Ophthalmic Surgery; Midwifery Gynæcology. Part I. may be passed in the fou year, and Part II. completed at the end of fifth.

Doctor in Medicine.—A Doctor in Medicine m have passed all the qualifying examinations and mus a B.A. of three years' standing. He must also sub a thesis and pass an Examination before the Re Professor of Physic.

Master in Surgery.—A Master in Surgery must Bachelor in Surgery of the University of Dublin not less than three years' standing, and must prod satisfactory evidence of having been engaged for less than two years from the date of his registra in the study, or study and practice, of his profess He must then pass a special examination.

Master in Obstetric Science.—A Master in Obstetric ence must be a Bachelor in Obstetric Science of years' standing, and must produce evidence of ring been engaged in the study of Obstetric Medicine Surgery during two years. He is then required pass a special examination.

Diploma in Gynæcology and Obstetrics.—A post-duate diploma is conferred upon registered medical ctitioners who take a six months' course at the tunda Hospital or other recognised institution, a months' course in Trinity College, and then pass pecial examination. The minimum time required the complete course is nine months.

Bachelor in Dental Science and Master in Dental ence.—The regulations under which these degrees awarded can be obtained by application to the gistrar of the School of Physic.

All Degrees and Courses of Instruction are open to men students.

Scholarships and Prizes.—1. Medical and Surgical velling Prizes, £100, awarded in alternate years. Bicentenary Memorial Prize, £30, awarded yearly, given to the Travelling Prize man. 3. Sir John ks Prize and Medal. 4. Edward Hallaran nett Prize and Medal. 5. FitzPatrick Scholar-p, awarded on results of Final Examination erest on £1000). 6. Medical Scholarship, £20 annum for two years, awarded in Chemistry, sics, Botany, and Zoology. 7. Medical Scholar-p in Anatomy and Physiology, £20 per annum for years. 8. Henry Hutchinson Stewart Scholar-ps, one in Botany, Zoology, Chemistry and sics, and another in Anatomy and Physiology, arded annually and valued at £10 per annum for ee years. 9. Henry Hutchinson Stewart Scholar-p in Mental Diseases, awarded from time to time, per annum for three years. 10. John Mallet ser Medal, awarded annually in Physiology. Daniel John Cunningham Medal and Prize, arded annually in Anatomy. 12. Begley Student-p, £40 per annum for four years, awarded nually. 13. Kingsmill Jones Memorial Prize, arded annually in Natural and Experimental ence, £15. 14. O'Sullivan Memorial Scholarship, awarded annually for excellency of record in ool.

Post-graduate Instruction.—Arrangements have been de, with the approval of the Board of Trinity lege, for a post-graduate course of instruction at School of Physic during the autumn from Monday, t. 17th, to Saturday, Oct. 6th. Members of the ss can reside in college rooms and dine on commons.

OSPITALS AFFORDING PRACTICE RECOGNISED BY THE IRISH UNIVERSITIES AND CORPORATIONS.[1]

SIR PATRICK DUN'S HOSPITAL, Grand Canal-street, ublin.—Classes both in Medicine and Surgery are ld each morning from 9 o'clock from Oct. 1st till end of June. Special classes for junior students l be held in the wards during the months of tober, November, and December. A Resident rgeon, with salary, is appointed annually. Six sident Pupils are appointed every six months. elve surgical Dressers and twelve Clinical Clerks appointed each month. There are facilities for men students.

The practice of the hospital is open to all students, d the certificates are recognised by Dublin Univer-y, the National University and Royal Colleges of rgeons of England, Ireland, and Scotland. It is official " Treatment Centre " for venereal diseases.

Prizes and Medals.—Clinical medals and prizes amounting to about £21 each will be awarded in Medicine and in Surgery respectively in accordance with the will of the late Rev. Samuel Haughton, M.D., S.F.T.C.D. Candidates who fail to obtain these medals and prizes will be awarded special certificates in Medicine and in Surgery provided they show sufficient merit.

Further information will be supplied by the Hon. Secretary to the Medical Board.

ADELAIDE HOSPITAL, Peter-street, Dublin.—Two resident surgeons are elected half-yearly and four or more resident pupils every six months. At the termination of the session prizes in Clinical Medicine, in Surgery, in Gynæcology, and in Dermatology will be awarded.

Prizes.—Wallace Beatty Memorial bursaries are awarded at the commencement of the winter session. In addition to the junior prizes the Hudson Scholarship, £30 and a gold medal, as well as a prize of £10 together with a silver medal, are awarded at the end of the session for proficiency in medicine, surgery, gynæcology, and pathology.

The certificates of attendance are recognised by all the Universities and licensing bodies in the United Kingdom. Further particulars may be obtained from the Secretary of the Hospital.

MATER MISERICORDIÆ HOSPITAL, Dublin. (Under the care of the Sisters of Mercy.)—This Hospital, containing 382 beds, is open at all hours for the reception of accidents and urgent cases. Clinical instruction is given by the Physicians and Surgeons at 9 A.M. daily. Ophthalmic Surgery is taught in the Special Wards and in the Dispensary. Surgical operations are performed daily. Connected with the hospital are extensive Dispensaries, which afford valuable opportunities for the study of general Medical and Surgical Diseases, and Accidents; a fully-equipped Biochemical Laboratory, a modern Electro-Massage Department, and Electrocardiograph room. Instruction is given on Pathology and Bacteriology. Three House Physicians, eight House Surgeons, and 18 resident pupils are elected annually. Dressers and Clinical Clerks are appointed regularly and certificates given for merit. Leonard Prizes will be offered for competition annually. Certificates of attendance are recognised by all the Universities and licensing bodies in the United Kingdom. There is a Private Hospital for the reception of Medical and Surgical cases. A Training School and a Home for Trained Nurses are connected with the Hospital, and Nurses who have passed a qualifying examination can be obtained on application to the Lady Superior.

Entries can be made with any of the physicians or surgeons, or with the Registrar, 13, Merrion-square. Detailed information may be obtained from the Secretary, Medical Board.

MERCER'S HOSPITAL.—This hospital contains 120 beds for medical and surgical cases, and arrangements have been made with the medical officers of Cork-street Fever Hospital whereby all students of this hospital are entitled to attend the clinical instruction of that institution and become eligible for the resident posts. There is a large dispensary for out-patients and a modern X ray department. An electrocardiograph has been installed. Students of the hospital are permitted to attend the gynæcological department, where they receive practical instruction. There are special wards for the treatment and study of children's diseases. A gold medal is awarded annually to the best student. During the past few years the hospital has undergone extensive alterations in order to bring it up to modern requirements. A House Surgeon is appointed annually. There are six men and two women Resident Pupils, and Clinical Clerks and Dressers are appointed from members of the classes.

For further particulars apply to Dr. Leonard Abrahamson, Hon. Sec., Medical Board, 40, Fitz-william-place.

[1] This list of the institutions recognised by the Conjoint ard of Ireland is supplemented in the regulations of the leges by those hospitals mentioned as recognised institu-ns in Scotland and England. The recognised facilities for ical instruction in some of the Irish centres have been cribed.

RICHMOND, WHITWORTH, AND HARDWICKE HOSPITALS (HOUSE OF INDUSTRY HOSPITALS), Dublin.—These hospitals contain 330 beds—130 for Surgical cases, 80 for Medical cases, 78 for Fever and other Epidemic Diseases, and an Auxiliary Wing of 42 beds. A Resident Physician and a Resident Surgeon are appointed each half year and are paid for their services. Resident Clinical Clerks are appointed each quarter and provided with furnished apartments and fuel. These appointments are open not only to advanced students but also to those who are qualified in Medicine and Surgery. The Dressers are selected from among the best qualified of the pupils without the payment of any additional fee. Women students are eligible for election as residents, and special apartments are reserved for their use. Extensive alterations and improvements have recently been made in the X ray, electrotherapeutic, and electrocardiographic departments. For information apply to Dr. G. E. Nesbitt, 71, St. Stephen's Green, Dublin.

ROYAL CITY OF DUBLIN HOSPITAL.—158 beds and a special wing for the treatment of fevers and contagious diseases founded by the late Mr. Drummond. There is a large nursery where special opportunities are afforded for the study of diseases of children, both medical and surgical. There are also special wards for ophthalmic, aural, and gynæcological cases. There is a largely attended out-patient department, where students are allowed to attend accidents and dress cases under supervision. Six resident pupils are appointed every three months. A House Surgeon and a House Physician are appointed annually. For information apply to the Secretary.

DR. STEEVENS' HOSPITAL, Dublin (Kingsbridge).—250 beds, only 150 now in use. There is accommodation for 10 resident pupils, each of whom is provided with a separate bedroom, and board is supplied by the hospital at a reasonable rate. There is an Electric Massage Department, a "Sun-Ray" Department, and an X Ray Department. There are also two V.D. wards and a largely attended V.D. Treatment Centre. All information with regard to the terms for such residency can be had from the Resident Surgeon at the Hospital. Secretary: E. D. F. Banks.

MEATH HOSPITAL AND COUNTY DUBLIN INFIRMARY.* 150 beds are available for clinical teaching. A building containing 40 of these beds is intended for the isolated treatment of fevers is attached to the hospital. The certificates of this hospital are recognised by all the universities and licensing bodies of the United Kingdom. Medical Clinical Clerks and Surgical Resident Pupils and Dressers are appointed every three months. Two House Surgeons and a Resident Casualty Officer are elected twice annually. The Smyth Memorial Prize in Medicine, value £50, is awarded in alternate years and is open to students of the hospital who have attended for at least two academic years. The next examination will be held in June, 1929. The Treasurer of the Medical Board will give full information.

JERVIS-STREET HOSPITAL, Dublin.*—Founded 1718; rebuilt 1886. 130 beds. The operation theatre contains all modern requirements.

ROTUNDA HOSPITAL, Dublin.—This institution is the largest combined gynæcological and maternity hospital in the British Empire. Over 4000 confinements are attended annually and upwards of 1000 gynæcological patients admitted. Students can take out their necessary gynæcological and midwifery practical courses. The work of the hospital is carried on continuously through the year, and consists of daily clinical instruction in the maternity department and examination and operations in the gynæcological department. Qualified students are given facilities for studying and assisting in the management of all abnormal cases so far as is practical. An antena dispensary is held three times weekly and all stude are encouraged to attend. A special class in gyna logical examination and diagnosis is conducted the Assistants to the Master. In addition there a special class in operative obstetrics, limited number. The pathological laboratory is under supervision of a skilled pathologist, who gives spe classes at intervals. There is a fully equipped X installation under the care of a competent radiologi A ward has been opened for the treatment of infant conditions, and is under the care of a pediatrici who gives instruction in the out-patient departme which is held daily. The appointments on the st of the hospital are given to qualified past students the hospital who have taken the L.M. and consist Extern Assistants for six months, one being appoint every three months. From these the Assistants the Master are appointed. Women students can res in the hospital on the same terms as men. The m room and sleeping quarters have been decora recently and reading rooms are provided. The L. is granted by examination after a six months' cou Fees for Intern students: one month £6 6s., mon other than the first £4 4s., three months £12 12s., months £21. Special gynæcological class £2 2s. month. For further particulars apply to the Mast Dr. Bethel Solomons, F.R.C.P.I.

COOMBE LYING-IN HOSPITAL AND GUINNESS D PENSARY FOR THE TREATMENT OF DISEASES PECUL TO WOMEN, Dublin.—This hospital contains 70 b and consists of two divisions, one of which is devo to lying-in cases and the other to the treatment diseases peculiar to women. Lectures are deliver practical instruction given, and gynæcologi operations are performed in the theatres da There is a general dispensary held daily, at wh instruction is given on the Diseases of Women a Children. There is a special afternoon dispens held by the Master and his assistants, at wh practical instruction in gynæcology is given. Ther no extra charge for attendance at this Dispensa There is accommodation for intern pupils, who en exceptional advantages of acquiring a thorough kn ledge of this branch of their profession. Won students can reside in the hospital. Clinical assista are appointed from amongst the pupils as vacan occur. Certificates of attendance at this hospi are accepted by all licensing bodies. Students enter for attendance at any time, but preference given to those entering from the first day of month. Further particulars may be had on applicat to the Master or the Registrar at the Hospital.

NATIONAL MATERNITY HOSPITAL, Holles-str Dublin.—Established 1894. The hospital consists Intern and Extern Maternity, Gynæcological War and a Dispensary for the treatment of Diseases Women and Children and an antenatal and p natal branch. Every facility is given for the carry out of practical work. Undergraduate and p graduate courses are arranged at any time. Certifica of attendance at this hospital are recognised by the licensing bodies. Clinical lectures are given da and Oral lectures four times per week. The L Diploma is given by special examination, which held three times a year. Further particulars can obtained from the Master or from the Secreta Holles-street, Dublin.

ST. VINCENT'S HOSPITAL AND DISPENSARY, Dubl —Established 1834. 200 beds. Clinical Lectures Medicine and Surgery are held from October to Ju Special classes for Juniors from October to Decemb Pathological and Bacteriological Demonstrations given every Thursday, and instructions in the use Laryngoscope and Otoscope for senior students ev Saturday. Medals and Prizes: the Bellingham g medal in Medicine and the O'Farrell gold medal Surgery are offered for competition at the end of t summer session, as well as junior prizes, also

* No returns.

Ardle Memorial Prize, value £20. There are a ge Extern Department and a new Pathological boratory. Hon. Secretary Medical Board, Wm. blin, M.B., F.R.C.S., 2, Fitzwilliam-square, Dublin.

NATIONAL UNIVERSITY OF IRELAND.*

Matriculation.—All students must pass a matriculan examination; the examination taking place in ne and September in Dublin, and at certain local tres, includes five subjects, three of which must be sh, English, and mathematics. All students must s in Irish except students not born in Ireland, and er students whose home residence shall have been side Ireland during the three years immediately pre- ing their matriculation; but all such students will expected to attend a course of instruction in Irish erature and History prior to obtaining any degree in University. The following are the subjects for exanation:—1. Irish. 2. Latin or Greek. 3. French, man, Italian, Spanish, Portuguese, Welsh, or other modern language approved by the Senate. English. 5. Mathematics. 6. Latin, Greek, French, man, Welsh, Spanish, Italian, Portuguese, or any er modern language approved by the Senate, tory, Geography, Applied Mathematics, or Physics an alternative, Chemistry, Botany, Agricultural ence, Commerce, Music, and for women candidates y Physiology and Hygiene. Students entering for grees in Medicine or Dentistry, if already registered the General Medical Council, must take Irish, Latin, glish, Mathematics, and a fifth subject.

The medical degrees granted are:—

M.B., B.Ch., and B.A.O.; and M.D., M.Ch., and A.O., Ph.D.—Printed forms of application for nission to any medical examination may be had m "The Registrar, The National University of land, Dublin."

The Constituent Colleges of the National University Ireland at which the full curriculum for medical grees can be obtained are University College, blin; University College, Cork; and University llege, Galway.

UNIVERSITY COLLEGE, DUBLIN.—*Matriculation.*—nost all the students of the College are triculated students of the National University Ireland. The pre-registration examination in ysics and chemistry is taken after matriculation her at the beginning of or during the winter sion. The course is of five years' duration and dates m the passing of the pre-registration examination.

Degrees of M.B., B.Ch., and B.A.O.—The First amination includes Applied Physics, Applied emistry, Botany, Zoology, and Applied Biology. e examination may be taken in two parts: rt I., Physics and Chemistry; Part II., Botany l Zoology. Honours may be obtained only en both parts are taken as one examination. The ond Examination includes Anatomy and Physioy. Both must be passed at the same time. The ird Examination (Part I.) includes Pathology, teria Medica, Pharmacology, and Therapeutics. rt II. (Third Examination), taken at the end of the urth Winter Session, includes Hygiene and Medical risprudence.

The Final Examination in Medicine, Midwifery, rgery, and Ophthalmology includes both the oretical and the clinical branches. No student can er for the M.B., B.Ch., or B.A.O. until the end of fifth year after registration, when the curriculum s been completed. The degree of M.D. may be tained either by examination or on published work. A Post-graduate Summer Course is held each year, ginning about the middle of June. The D.P.H. urse extends over the year, beginning at the opening the session.

* No returns.

UNIVERSITY COLLEGE, CORK: THE SCHOOL OF MEDICINE.—Students must have passed the Matriculation Examination of the University or some other recognised examination, and a preliminary examination recognised by the General Medical Council.

Medical Students who have passed the First Professional Examination of the Conjoint Boards of Ireland, England, or Scotland may be admitted to the rank of second-year students on making application to the Council. Similarly, students who have passed the Second Professional Examination of the same Boards may be admitted to the rank of third-year students; and those who have passed the Third Professional Examination of the Dublin Colleges, or of the Edinburgh Colleges and Glasgow Faculties, may rank as fourth-year.

The school is provided with physiological, toxicological, pathological, and pharmaceutical laboratories, materia medica, anatomical and pathological museums, as well as a collection of surgical and obstetrical instruments and appliances. There are dissecting-rooms, well-appointed physical, chemical, and biological laboratories, a large natural history museum in the adjoining building, and part of the College ground is laid out as a botanical garden. The plant houses are well filled with plants and are open to the students in the class of Botany. The Library contains about 70,000 volumes and is open daily during term time to students. The Medical Museum occupies a large room erected at the northern end of the medical buildings. There are Students' Clubs for men and women students of the College and various athletic clubs.

Residence of Students.—Students not living at home, or with relatives or friends, sanctioned by their parents or guardians, are required to live in a hostel or in recognised lodgings, and register their addresses each session. The Honan Hostel, adjoining the College, is equipped by private endowment. A number of sets of rooms, together with recreation and common rooms, are provided for lay students who may desire to live there. For full particulars apply to the Warden. The Ursuline Convent, Blackrock, has a house of residence, quite separate from their Secondary School, for Catholic women students.

Clinical Instruction.—Students may attend the South Charitable Infirmary and County of Cork General Hospital, Cork North Charitable Infirmary and City of Cork General Hospital, the Mercy Hospital, the Cork District Lunatic Asylum, the Victoria Hospital for Diseases of Women and Children, the County Lying-in Hospital, Bon Secours, Fever, the District, and Ear, Eye, and Throat Hospitals.

Complete information with regard to class fees, scholarships, and prizes can be obtained from the Dean of the Medical Faculty, and in respect of the hospitals from the Secretaries.

UNIVERSITY COLLEGE, GALWAY: SCHOOL OF MEDICINE.—The College contains a well-lighted and ventilated dissecting-room and an anatomical lecture theatre; physiological, pathological, pharmaceutical, chemical, and physical laboratories; anatomical, pathological, gynæcological, and materia medica museums; as well as large natural history and geological museums and an extensive library in which students can read and from which they can borrow books. There are 12 Entrance Scholarships, value £25 each, for which Medical Students compete with other students on the Entrance Course. In the Second, Third, and Fourth years three Scholarships in each year, value £25 each, are reserved for Medical Students. H. H. Stewart Scholarships (£10 a year for three years) are awarded by the University in Anatomy and Physiology at Second Medical Examination amongst Students of the three constituent Colleges. Travelling Studentships (£200 a year for two years) are offered by the University for competition amongst Medical Graduates of the three Colleges of not more than two years' standing. Women students are eligible for all College and University Degrees, Distinctions, and Prizes. There are extensive grounds, a portion of which

is occupied by a Botanic Garden and a portion is at the disposal of the College Athletic Union. There are several student societies in the College, including a Biological Society. There are abundant facilities for research and Post-graduate work in the Chemistry, Physiology, and Pathology departments. There are ample facilities for Women Students. Further information can be obtained from the Registrar of the College.

Clinical Instruction is given in the Galway Tuberculosis Hospital and in the Galway Central and Fever Hospitals, containing on an average 350 patients.

CENTRAL HOSPITAL, GALWAY (300 beds).—In this completely renovated hospital, in addition to the Finer Surgical and Medical Departments, there are now Eye and Ear, Throat and Nose, Gynæcological and Obstetrical, Pathological, X Ray, Ultra-Violet Rays, and Electrical and Massage Departments. Students attend from University College, Galway. Medical and Surgical Clinics are held on alternate days during term. One Resident Physician and one Resident Surgeon are appointed every six months. Arrangements are being made for admission of Resident Students. The hospital is open to qualified medical men for post-graduate work.

QUEEN'S UNIVERSITY OF BELFAST.

There are six degrees in the Faculty of Medicine of the University—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (B.Ch.), Bachelor of Obstetrics (B.A.O.), Doctor of Medicine (M.D.), Master of Surgery (M.Ch.), and Master of Obstetrics (M.A.O.). The University also grants a Diploma in Public Health, particulars of which will be found in the University Calendar. The degrees of M.B., B.Ch., and B.A.O. are the primary degrees in the Faculty of Medicine, and are conferred at the same time and after the same course of study. No student is admitted to the final examination for these degrees until he has shown: (1) that he is a matriculated student of the University; (2) that he has completed the prescribed course of study in the Faculty of Medicine extending over a period of not less than five academic years from the date of his registration as a student of Medicine; (3) that he has passed the several examinations prescribed; (4) that he has attended in the University during three academic years at least the courses of study prescribed for such degrees (the Senate may accept, for not more than two academic years of the required five, courses of study pursued in any other University or School of Medicine approved by the Senate); and (5) that he has attained the age of 21 years. Every candidate for admission shall matriculate or fulfil such other test of fitness as may be prescribed by the Senate, or may be exempted from the matriculation examination by having passed similar examinations elsewhere. For information as to Scholarships and Prizes, inquiry should be made of the Secretary of the University.

Primary Degrees of M.B., B.Ch., B.A.O.—All candidates for these degrees must satisfy the examiners in the subjects of four examinations.

The First Medical Examination.—The subjects of this examination are Chemistry (Inorganic and Organic), Experimental Physics, Botany and Zoology. The examination will be divided into two parts which may be taken separately: I., Chemistry and Physics; II., Botany and Zoology.

The Second Medical Examination.—The subjects are Anatomy and Practical Anatomy, Physiology and Practical Physiology. Candidates who have previously passed the First Medical Examination may present themselves for this examination at the close of their second year.

The Third Medical Examination.—The subjects are: (1) Pathology and Practical Pathology; (2) Materia Medica, Pharmacology and Therapeutics; (3) Medical Jurisprudence; (4) Hygiene. Candidat who have previously passed the Second Medic Examination may present themselves for this exam nation at the close of the third year. Attendance a course in any subject of the Third Medical Examin tion shall not entitle a student to a certificate attendance unless he has previously passed in all t subjects of the Second Medical Examination.

The Fourth Medical Examination.—The subjec are: (1) Medicine; (2) Surgery; (3) Midwifery; (Ophthalmology and Otology. This examination m be taken in two parts: I., Systematic; II., Clinic Practical and Oral. Candidates who have previous passed the Third Examination may present the selves for Part I. of the Fourth Examination at t close of the fourth year, provided that they ha fulfilled the necessary requirements as to attendanc &c., on the courses of instruction in the subjects examination. Candidates who have passed Part of this examination may present themselves f Part II. at the close of the fifth year, provided th they have fulfilled the necessary requirements as hospital attendance on the various clinical courses the subjects of examination. Parts I. and II. m be taken together at the close of the fifth yea Attendance on a course in any subject of the Four Medical Examination shall not entitle a student to certificate of attendance unless he has passed in t subjects of the Second Medical Examination.

Degrees of M.D., M.Ch., and M.A.O.—The degrees are not conferred until the expiration of least three academic years, or in the case of graduat of the University in Arts or Science of at least tw academic years, after admission to the prima degrees in the Faculty of Medicine. Every can date must show that in the interval he has pursu such courses of study, or been engaged in such pra tical work as may be prescribed. These degrees m be conferred by the Senate either (*a*) after an examir tion, which includes written, oral, clinical, and pra tical examinations; or (*b*) on the submission of a the or other evidence of original study or research, be approved by the Faculty of Medicine after oral or other examination of the candidate on t subject.

The Medical School.—The Donald Currie Chemi Buildings contain a lecture theatre, a preparati room, a chemical museum, a large class-room f elementary practical chemistry, laboratories f qualitative and quantitative analysis, rooms for wa and gas analysis, dark room for photographic pu poses and balance room, provided with all mode appliances. The Anatomical Department contains large and well-lighted dissecting-room, a lecture-roo a professor's and demonstrator's room, a bone-roo and a laboratory for microscopic and photograp work. The Medical Museum is in the same buildi The Jaffé Laboratories for Physiology comprise lecture theatre, laboratories for practical work chemical physiology, histology, and experimen physiology, and in addition small private resear rooms, including balance, galvanometer, and cent fuge rooms. The J. C. White laboratories, recent founded, are fully equipped for research in b chemistry and bacteriology. The Musgrave Pat logical Laboratory.—In this department opportun is afforded for research in pathology and bacteriolo The department is in touch with most of the hospit in Belfast, and there is an ample supply of material investigation by graduates in morbid histology, clini pathology, and the bacteriology of infectious diseas A course in pathology or bacteriology is given graduates, and members of this class have an opp tunity of seeing the methods employed in the vario investigations carried out in the department for t Public Health Committee of the Corporation in co nexion with water-supply, sewage disposal, meat- a milk-supply, and the diagnosis of cases of infectio diseases. The certificate issued to members f the class in bacteriology qualifies for the D.P.H. degr The Pharmaceutical Laboratory is fitted and equip

r the work of practically instructing students in the mpounding and dispensing of medicines.

Clinical Instruction.—The following institutions are cognised by the University as affording proper portunities for clinical instruction: the Royal ictoria Hospital, the Mater Infirmorum Hospital, e Union Hospitals, the Belfast Hospital for Sick ildren, the Belfast Maternity, the Ulster Hospital r Women and Children, the Ulster Eye, Ear, and roat Hospital, the Belfast Ophthalmic Hospital, e Purdysburn Fever Hospital, and the Belfast strict Lunatic Asylum. Complete information can obtained from the respective Secretaries.

ROYAL VICTORIA HOSPITAL, Belfast, 436 beds.—udents eligible for McGrath, McQuitty, Malcolm, ulter Smyth and Elwood Scholarships aggregate nual value £185. Twelve House Surgeons and ouse Physicians. Thirty-six resident pupilships, three onths each, annually for Senior Students, of which proportion is allotted to Women Students. Special partments for Radiology, Clinical Pathology, V.D., rmatology, Gynæcology, Vaccine Therapy, Electro-diography, Dentistry.

MATER INFIRMORUM HOSPITAL, Belfast.—This spital contains 270 beds and is open at all hours for e reception of accidents and urgent cases. Clinical struction is given daily by Physicians and Surgeons. rgical operations are performed daily. The out-tient departments in Medicine and Surgery, also e special dispensaries for Gynæcology, Ear, Eye d Throat, Electrotherapeutics, Venereal Diseases e very largely attended and afford valuable portunities to students for the study of those bjects. A House Physician and two House Surgeons e elected every six months. Resident pupils are mitted as the vacancies arise. Three Exhibitions d a Gold Medal are competed for annually in June. rtificates of attendance upon this hospital are cognised by all the Universities and licensing bodies the United Kingdom.

BELFAST INFIRMARY AND HOSPITAL (1600 beds).—inical courses are given quarterly, and a course for .P.H. in Hospital. Intern Venereal Clinic in Infir-ary under Corporation scheme. Maternity Hospital cognised for Practical Midwifery training. Par-ulars may be obtained on application to the Hon. c. Visiting Medical Staff. Certificate of vaccination ass recognised by Local Government Board. There a department for Cancer with 32 beds, and X Ray d Bacteriological Departments.

THE BELFAST HOSPITAL FOR SICK CHILDREN, ueen-street (45 beds).—Clinical instruction is given this hospital. During the Winter Session two Courses Lectures are delivered on the Medical and Surgical iseases incidental to Infancy and Childhood. Demon-rations in Ophthalmology and Pathology are given, d ample opportunities are afforded in the wards d in the Out-patient Department for gaining a actical and theoretical knowledge of the diseases of fancy and Childhood. This Hospital grants rtificates in Diseases of Children, which are recog-sed by the various Examining Bodies. Certificates e also granted for post-graduate study. A Gold edal is offered for competition at the close of the ssion.

MATERNITY HOSPITAL, Townsend-street, Belfast.—wenty-five beds in constant occupation, and exclu-vely devoted to Midwifery and Antenatal condi-ons. There is also a large district. The Queen's niversity of Belfast have erected a Students' Hostel connexion with the Hospital where six Students d Post-graduates are received each month. The niversity Tutor in Obstetrics resides in the Hostel d Students conduct their cases under his supervision. here is a large Antenatal Department and a epartment for Venereal Diseases. Communications ould be made to C. H. G. Macafee, M.B., F.R.C.S., on. Secretary of the Medical Staff.

ULSTER HOSPITAL FOR CHILDREN AND WOMEN, Templemore-avenue, Belfast (57 beds).—Clinical instruction to students in Diseases of Children, Gynæcology and Obstetrics. Special departments: Radiology and Actinotherapy, Eye, Ear, and Throat, V.D. Clinic and Antenatal Clinic. Gold Medal awarded annually. Two House Surgeons appointed from students of hospital.

BENN ULSTER EYE, EAR AND THROAT HOSPITAL, Clifton-street, 30 beds, and BELFAST OPHTHALMIC HOSPITAL, Great Victoria-street, 30 beds.—Practical demonstrations by the staff and occasional clinical lectures in the subjects of Ophthalmology, Otology, and Laryngology. Clinical instruction is given daily.

BELFAST FEVER HOSPITALS.—City Fever Hospital, Purdysburn (360 beds); Union Fever Hospital (200 beds). Clinical Classes are held during the winter and summer sessions. Post-graduate (D.P.H.) Classes are also held. Dr. A. Gardner Robb, Lecturer and Medical Superintendent.

BELFAST MENTAL HOSPITAL (PURDYSBURN VILLA COLONY) (1300 beds). University Lectures and clinics.

IRISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND AND ROYAL COLLEGE OF SURGEONS IN IRELAND.

The Irish Conjoint Board requires of candidates the passage either of its own preliminary examination in the subjects of general education or proof that the candidate has passed one of the tests accepted by the General Medical Council as well as passing in the Pre-Registration Examinations in Chemistry and Physics and Biology.

Professional Examinations.—There are three professional examinations, the first of which cannot be passed earlier than the end of the second winter session, nor the final before the conclusion of full five years of medical study. Before being admitted to any of them the candidate must show that he has studied the different subjects in practice and theory for the requisite periods, certificates to this effect being accepted from the authorities of most of the recognised medical schools at home and abroad. The first examination deals with (*a*) Anatomy, and (*b*) Physiology and Histology. The second examination deals with (*a*) Pathology, (*b*) Materia Medica, Pharmacy, and Therapeutics and Ophthalmology, and may be taken separately.

Final Examination.—This is divided into three divisions, which cannot be completed until at least five years have passed in medical studies other than those for the Pre-Registration Examinations, and five years at least since the beginning of the curriculum. The divisions are (*a*) Medicine, including Fevers, Mental Diseases, and Diseases of Children; (*b*) Surgery, including Operative Surgery; (*c*) Midwifery, including Diseases of Women and Children, and the Practice of Vaccination.

Diploma in Psychological Medicine.—There are two examinations in connexion with this Diploma: Part I. consists of (*a*) Anatomy and Physiology of the Nervous System; (*b*) Psychology. Part II.: (*a*) Neurology, including Clinical and Pathological Neurology; (*b*) Psychological Medicine, including its legal relationships.

Further information can be obtained from the Secretary of the Committee of Management, Royal College of Surgeons, St. Stephen's Green.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

The College issues its Licences in Medicine and in Midwifery to practitioners whose names appear on the Medical Register of the United Kingdom.

The Licence in Medicine.—The subjects of examination are: Practice of Medicine, Clinical Medicine, Pathology, Medical Jurisprudence, Midwifery, Hygiene, and Therapeutics.

The Licence in Midwifery.—Candidates must produce certificates of registration. A registered medical practitioner of five years' standing may be exempted from the examination by printed questions.

The Membership.—Examinations for Membership are held in February, June, and November.

The Fellowship.—Fellows are elected by ballot. Applicants must have been a Member of the College for at least one year and must have attained the age of 27 years.

Further particulars can be obtained from the Registrar of the Royal College of Physicians of Ireland, 6, Kildare-street, Dublin.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

The College issues its Licence in Surgery to practitioners whose names are entered either on the Medical Register for the United Kingdom, the Colonial Medical Register, or the Foreign Medical Register of the year in which he presents himself for examination, and who satisfies the Council that he has passed through a course of study and Examinations equivalent to those required by the Regulations of the Irish Conjoint Board.

Candidates are examined in General Surgery (paper and oral), Clinical Surgery, Surgical Pathology (oral), Operative Surgery, Surgical Anatomy (paper), and Ophthalmic and Aural Surgery (clinical).

Diploma in Midwifery.—A diploma in Midwifery is granted after examination to persons possessing a registrable qualification.

Fellowship Examinations.—Candidates for the Fellowship shall make application to the President and Council to be admitted to examination. They are required to pass two examinations—Primary and Final. Candidates may present themselves for the Final Examination immediately after passing the Primary part, provided they have complied with the necessary regulations. The subjects for the Primary Examination are (*a*) Anatomy, including Dissections; and (*b*) Physiology and Histology. The subjects for the Final Examination are Surgery, including Surgical Anatomy and Pathology. For admission to the Final Examination the candidate must have passed the Primary Examination, and must be a Licentiate or Graduate in Surgery of a university or licensing body recognised by the General Medical Council; all such candidates must not be less than 25 years of age.

Further particulars can be obtained from the Registrar of the College, Stephen's-green West, Dublin.

ROYAL COLLEGE OF SURGEONS IN IRELAND (SCHOOLS OF SURGERY).—The schools of surgery are attached by Charter to the Royal College of Surgeons and have existed as a department of the College for over a century. They are carried on within the College buildings and are specially subject to the supervision and control of the Council, who are empowered to appoint and remove the professors and to regulate the methods of teaching pursued. The buildings have been reconstructed, the capacity of the dissecting-room nearly trebled, and special pathological, bacteriological, public health, and pharmaceutical laboratories fitted with the most approved appliances in order that students may have the advantage of the most modern methods of instruction. The entire building is heated by hot-water pipes and lighted throughout by the electric light. Winter Session commences in October; Summer Session in April. Scholarships and Prizes Carmichael Scholarship, £15; Mayne Scholarship, £8 Stoney Memorial gold medal; Operative Surger gold and silver medals; Pierefoy Memorial Priz value £150; Barker Prize, £26 5*s.*; H. Macnaughto Jones gold medal in Obstetrics and Gynæcology and class prizes and medals. Prospectuses and guid for medical students can be obtained post free o written application to the Registrar, Royal Colleg of Surgeons, Stephen's-green W., Dublin.

APOTHECARIES' HALL OF IRELAND.*

The Licence of this Hall is granted to students wh present certificates of having fully completed the cours of study as laid down in the curriculum and who pa the necessary examinations. The diploma of th Hall entitles the holder to be registered as a pract tioner in medicine, surgery, and midwifery, with als the privileges of the Apothecary's Licence.

Candidates must pass two Professional Examina tions, called the Primary Examination and the Fin Examination, which are conducted at separate time partly in writing, and partly practically and orall The Primary and Final Professional Examinatio are held twice a year—viz., in June and Novembe or such other dates as may be determined.

Candidates who produce satisfactory evidence having passed an examination for a Degree or Licen in Medicine, conducted by any University or Roy College in the British Empire, or by any Foreig University whose Degrees are recognised in th Foreign List of the Medical Register, will be exempt from the Primary Examination.

The subjects for Part I. of the Primary Examin tion are: Anatomy, Physiology and Histolog including Bio-Chemistry; and for Part II., Mate Medica and Pharmacy, Pathology, and Medic Jurisprudence and Hygiene.

For the Final Examination the subjects ar (*a*) Medicine and Clinical Medicine and Clinic Methods. (*b*) Surgery—Clinical, Ophthalmic an Operative; and Surgical Anatomy. (*c*) Midwifery an Gynæcology, and Practical Pharmacy and Mate Medica (if not taken at Intermediate Examination

Each candidate before receiving his diploma mu produce evidence that he has attained the age of years. The details of the course of education requir and syllabus of the examinations will be suppli by the Registrar at 95, Merrion-square, Dublin.

WE take this opportunity of thanking the offici of Government Departments and the Deans an Secretaries of the various institutions for th kind coöperation in enabling us to bring t information contained in our Students' Number to date.

GUILD OF ST. LUKE.

THE Guild of St. Luke was founded over 60 yea ago by a few medical students, chiefly to meet th own religious needs. It now makes a wider appe and its membership is open to all students an practitioners of medicine, both men and women, wh are members of the Church of England, the cler of which are eligible as Clerical Associates. T Chapter meets in every month of each term, and festival service is held yearly at St. Luke's tid usually at St. Paul's or Westminster Abbey. Th year the service will be at the Abbey. Besides t parent Guild, there are a Women's Ward and Hospital Student's Branch in London. There a also a Midland Counties Ward and a Cambridge War Particulars of the objects and activities of the Gu and forms of application for membership can obtained from the Secretary of the Guild of St. Lul Room B.B., King's College, Strand, W.C.2.

*No returns.

THE LANCET.

LONDON: SATURDAY, AUGUST 25, 1928.

THE READJUSTMENT OF THE MEDICAL CURRICULUM.

DURING the past 12 months no public aspect of ıe calling of medicine has been seriously altered, o legal enactment has introduced any big departure ıto professional life, and no pronouncements of the eneral Medical Council have resulted in any radical ıanges of the curriculum. The tendency in London segregate medical study as between men and omen students may be only a passing phase. The ımbers of the medical profession in practice have emained virtually stable, while the same can be said ı general terms of the population of the Empire, so ıat no situation has been created attributable either an excessive or deficient number of our calling; ıere is still keen competition in some quarters, and ıere is still much room for the right man in others. ut the static conditions do not imply any pause in rogress, for the absence of marked episode has ynchronised with much steady work along educational nes previously laid down.

For example, there may be cited the advance made ıroughout the country towards the readjustment f the medical curriculum in accordance with the esolutions of the General Medical Council passed some x years ago. These resolutions came into force n Jan. 1st, 1923, and their result has been the ccurrence of important deliberations in the Council, ıe various questions arising being dealt with in eports by the Education Committee, and made ıe subject of correspondence between the Committee nd the centres of medical education. The gist f the work of the Council has been to arrange an rderly and common course of study as a minimum tandard for the centres, while safeguarding entry o the profession by an examination ensuring that efore registration the student must have passed recognised examination in general education and, in ddition, an examination in elementary chemistry nd physics either conducted by, or recognised by, ne of the licensing bodies. The registered student ill in this way, theoretically, have broken ground ı two basic directions of his professional work while eing generally equipped up to a professional tandard. After registration the resolutions of he Council in regard to professional education rovide that the period of professional study etween the date of registration as a medical tudent and the date of the final examination for ny diploma entitling to registration should extend ver not less than five academic years. That is o say, the student should have passed the exam-ıation in general education and the pre-registration xamination and have commenced study at a medical chool before he can be registered, after which the ime required is a minimum of five academic years, r, say, 57 months. The proposal for a pre-registration xamination was of course made with the object of ghtening the preliminary portion of the medical ourse, the assistance of various educational agencies, articularly the higher secondary schools, being called ı to assist in laying a scientific foundation for medical tudents. This reform was advocated in our columns nd elsewhere many years ago, but failed to find upport owing to the feeling that the unequal distribution in the kingdom of these secondary schools would act prejudicially for some of the students, but a wider and wiser view now obtains. Other primary and additional resolutions of the Council dealt with the course and examinations of the whole curriculum, suggesting the ground that must be covered by general and special study and the best way in which to allot the time available, when the whole document, in the form of an Interim Report of the Education Committee, was submitted to the various educational centres, who were invited to make comment upon them. They were asked, in fact, to indicate how far their existing patterns of training complied with those advocated by the Council, and the resulting replies disclosed both a satisfactory state of affairs in being and a general willingness to meet the new requirements—this not only in respect of the pre-registration examination and the arrangement of the five years' course, but along many special lines of academic and practical instruction. The replies of the licensing bodies were later published in the Final Report of the Education Committee and the information summarised in this issue of THE LANCET is in accord with them.

Those, then, who are now joining our ranks enter a profession where the steps of their training will be guided with a precision that until quite recently was unknown. This lucid charting of the voyage will be found valuable to many, and indeed to all, for both industry and attention will have to be sustained by them for an extended period. The Council is to be congratulated upon the outcome of delicate and protracted labours in readjusting the curriculum; but it may be pointed out that the whole spirit of these labours, as well as their issue at the present moment, proves that the curriculum will always need readjustment in accordance with the developments of medical science. For example, throughout the latest pourparlers no particular stress appears to have been laid either by the Council or by the licensing bodies on the difficult subject of practical instruction in midwifery, and during the period that has elapsed since the Final Report of the Education Committee on readjustment was published, this question has become burning. Among the various subjects specially recommended for study by the Council, tuberculosis, venereal diseases, and antenatal conditions appeared to the Education Committee to be of particular importance, so much so that, at the request of the Committee, Sir GEORGE NEWMAN prepared a personal report on the subject, which has now been circulated to the licensing bodies. Progress along these lines should help to prevent the sad divergence between preventive and curative medicine. All these licensing bodies provide systematic instruction in midwifery over a fair proportion of the five years' course, and all students are compelled, in addition, to conduct an adequate number of labours within a recognised institution or, under supervision, as clinical visitants at the homes of the patients. But undoubtedly more will be expected. The intentions of all the licensing bodies are admirable, but it is common knowledge that the midwifery training of students, speaking generally, requires strengthening on the practical side. This is a circumstance which will have to be borne in mind when the methods for securing coöperation between the voluntary hospitals and the county institutions are under discussion—as they will immediately be; while the new diploma of the Society of Apothecaries of London demonstrates that a higher standard of obstetric and gynæcological accomplishment is necessary. Midwifery has always been the keystone of general practice.

The Medical Services.

ROYAL NAVAL MEDICAL SERVICE.

Choosing a Career.

To a man of the proper temperament, a career as a medical officer in the Royal Navy offers very definite attractions. In these days his professional knowledge will most certainly not rust in this Service, and in the naval hospitals he will have opportunities of practising every branch of his profession except gynæcology. He can obtain one of 60 paid specialist appointments, and these fall under the headings of medicine; surgery; bacteriology and pathology; hygiene; diseases of eyes, nose, ear, and throat; radiology; anæsthetics; genito-urinary and venereal diseases; and the principles of physical training. He will be encouraged to work hard and will have chances to play hard. The Navy was possibly the first public Service to realise the value of recreation, and puts its provision into practice, and there is no branch of athletics or field sports in which the naval officer does not have an opportunity of engaging in, in a home port or on a foreign station. He will see the world largely and often under ideal conditions. A naval medical officer who is a good doctor, keen on work and play, and unselfish, invariably becomes everybody's friend. The naval officer and the bluejacket are quick to recognise a medical officer who is keen on his work, thoughtful for his patients, and one who strives after improving the health of the Navy. And nowhere can one find more delightful friends than in the Navy.

There is to-day much to encourage the right type of medical man to join the Navy. The Admiralty allow an ante-date of one year to those naval surgeons who before entry held a resident appointment for one year at certain large hospitals, and encourage men to take higher qualifications. Opportunities to this end are freely given, when the exigencies of the Service will permit, and medical officers are able to take post-graduate courses prior to sitting for these higher examinations. As a matter of fact, a large number of naval medical officers since joining the Navy have taken various honour qualifications as well as special diplomas, and it is recognised that this is good for the Navy as well as for the officer. In the large naval hospitals, the medical, surgical, and specialist work is of a high standard. It is exacting, but it is the aim of the Admiralty to arrange appointments as far as possible so that medical officers have an opportunity of alternating their work both at home and abroad, and ashore and afloat. And to give naval surgeons full opportunities for professional work the general and specialist courses have been increased in number so that, as far as possible, every officer shall have a course of instruction of not less than four months' duration every four years. The number of specialists allowed is now 60 instead of 46, and the specialist allowance is 5*s*. a day instead of 2*s*. 6*d*. a day. The establishment of surgeon captains has been increased from 16 to 20.

The total number of medical officers in the Navy is 402, and every recent improvement has been made towards giving increased opportunities of advancement to the best men, in their science, in research, and in organisation. He has opportunities to emulate some of the great naval physicians and surgeons of the past.

Pay.

The cost of living in the Navy is cheap, and an officer can live on his pay and enjoy life if he is not extravagant, especially if he does not embark in matrimony too early. A small amount of private means goes much further in the Navy than in civil life. The three vital points—pay, prospects, and promotion—of the naval medical officer can be grasped by referring to the following clear and brief table.

Full Pay.

	£	£	
Surgeon Lieutenant (short service and permanent service)	from 452	to 499	per annum
Surgeon Lieutenant-Commander (promoted after six years' service)	,, 600	to 636	,,
Surgeon Commander (promoted after a further six years' service)	,, 772	to 976	,,
Surgeon Captain (promoted by selection)	,, 1116	to 1372	,,
Surgeon Rear-Admiral (promoted by selection)	1800		
Medical Director-General (Surgeon Vice-Admiral)	2350		

Allowances.

Allowances when in charge of hospitals and sick-quarters	10*s*. and 5*s*. per diem.
Sixty Specialist allowances of	5*s*. per diem.
Allowances to Senior Medical Officers in flag ships	5*s*. and 2*s*. 6*d*. per diem.

Accelerated promotion can be gained under certain condition there are also, on certain occasions, servant's allowance, provisi allowance, and lodging allowance.

Pension.

	Maximum retired pay.
Surgeon Vice-Admiral	£1123 per annum, on vacati office.
Surgeon Rear-Admiral	£950 per annum, at age of 6
Surgeon Captain	£846 ,, ,,
Surgeon Commander	£564 ,, ,,
Surgeon Lieutenant-Commander and Surgeon Lieutenant	£423 ,, ,,

Gratuities on Retirement.

Below age of 45, officers receive gratuities on retirement on t following scale :—

	£
After 4 years' service	500
,, 8 ,, ,,	1000
,, 12 ,, ,,	1500
,, 18 ,, ,,	2250

The extra allowances alluded to in the table a not to be looked upon as very exceptional. About quarter of the medical officers of the Navy are drawi extra allowances. Of recent years medical office have been admitted into the Navy without entran examination and for short service with the option turning over to the permanent service, but it anticipated that it will not be long before t Admiralty will revert to the old-established syste of entrance by competitive examination twice a ye in batches of about ten officers.

Dental Branch.

The Naval Dental Service offers similar oppo tunities to qualified dental surgeons except th higher rank than that of the recently institut Surgeon Captain (D) is not open to them. Th are provided with suitable surgery accommodati equipped with modern appliances and supplied wi all material required for their work, and there every opportunity for them to maintain a hi standard of professional skill.

Candidates are required to produce certificat of birth, registration, and of character, and must physically fit for active service anywhere. An out allowance of £50 is payable to officers finally enter and commissioned. The rank of Surgeon Lieutenan Commander (D) is attained on the completion of s years' satisfactory service. Promotions to Surge Commander (D) and Surgeon Captain (D) are ma strictly by selection from the rank next below a are confined to officers who prove fitted in eve respect for these ranks. The present establishme of dental officers is: 1 Surgeon Captain (D), 3 Surge Commanders (D), 60 Surgeon Lieutenant-Commande (D) and Surgeon Lieutenants (D).

Provision has been made for candidates wh at the time of passing the examination, hold or a about to hold an appointment as Dental Officer a recognised Civil Hospital. The time concerne provided it does not exceed six months, may reck for increase of full pay while on the active li Surgeon Lieutenant-Commanders (D) of over tw years' seniority will be eligible for a three montl Post-graduate Course while borne on full pay.

As in the case of the medical branch, 20 per cent. f the rates of full pay, unemployed pay, half pay, and tired pay introduced in 1919 is considered as due to ie high cost of living in 1919 and subject to change eriodically either upwards or downwards according s the cost of living rises or falls. The first revision ook place in July, 1924, when all the rates were educed by approximately 5½ per cent., the second evision took place in July, 1927, when all rates ere reduced by ½ per cent., and further revisions re due every three years—i.e., in July, 1930, and o on.

ARMY MEDICAL SERVICE.

Royal Army Medical Corps.

The publication of the Royal Warrant of 1926 has moved many of the grievances of officers of the orps, and this Service can again be recommended a career to young medical men. Competitive aminations for regular commission, which have een in abeyance for some time, will again be held alf-yearly in January and July. These examinations medicine and surgery are entirely of a clinical and actical character, partly written and partly oral.

The regulations for admission giving full details ould be obtained from the Permanent Under ecretary of State (A.M.D. 1), War Office, Whitehall, ondon, S.W. 1, and carefully studied. A personal terview with a representative of the Director-General, rmy Medical Services, is readily obtainable.

The rates of pay and allowances are good; the portunities of post-graduate study are generous, id the work is varied, responsible, and interesting. he gratuities after certain periods of service enable officer should he so desire to leave the Service with capital sum large enough to go a long way towards -establishing himself in civil life, and, further, the nowledge of the world and the comradeship of his llow officers that he has gained in the Army will be no small value to him.

New entrants are commissioned in the rank of eutenant, and the first six months of service are ent on probation, during which time they undergo, addition to their Military training at the Royal rmy Medical Corps Depôt at Aldershot, a pro- tionary course at the Royal Army Medical College London in Hygiene, Pathology, Tropical Medicine, ilitary Surgery, Recruiting, the prevention and eatment of Venereal Disease, and the elements of rmy Administration. At the end of this course, id after qualifying at the necessary examinations, their commissions are confirmed, and they take their places in seniority according to the total marks obtained at all examinations up to that date. Officers Training Corps service with possession of Certificates "A" or "B" (Medical) carry a definite value in marks in this total.

An entrant who is holding or about to hold at the time of the entrance examination a resident House Appointment at an approved Civil Hospital may be seconded while holding such an appointment up to a maximum period of 12 months. A candidate who has held such an appointment within six months of entry may be granted an antedate up to 12 months in respect of the period the appointment was held. This secondment and antedate counts in all respects as commissioned service, except that pay will not be issued for that period.

After a total period of one year's service at home the young officer goes abroad, probably to India, for his first tour of foreign service. Here he gains his first practical experience of tropical disease and tropical hygiene, and possibly his first experience of active service on the frontiers of India. His tour abroad lasts five years, with probably six months' leave home during that time. On returning home the R.A.M.C. officer has the opportunity to decide whether he will remain in the Corps or accept the gratuity of £1000 after seven years' service, and try his fortune in civil life. If he elects to remain, he will, between his eighth and twelfth year of service, undergo a course of post-graduate study at the Royal Army Medical College and the London Hospitals of five months' duration, followed by a course of study of a special subject selected by himself, provided he has shown special aptitude in the post-graduate course or during his previous service. During this period of study he remains on full pay, and the fees for the courses are paid by the State. When qualified in his special subject, the officer becomes entitled to specialist pay at 5*s.* per day when holding a specialist appointment. After this post-graduate course the officer probably proceeds abroad again and promotion to Major rapidly ensues, and from that time onward the officer receives regular successive increases of pay, and is eligible for additional and charge pay as well. The Directorates of Hygiene and Pathology and the appointment of two serving officers as Consultants in Medicine and Surgery have been instituted and have proved a marked success, all these appointments being of the rank of Colonel or Major-General.

Under these conditions the possibilities for good workers are very great in the Royal Army Medical Corps. There is scope for original research in tropical

Pay and Allowances.

Rank.	Pay per diem.*	Rations.†	Servant.	Married.			Unmarried.		Approximate daily total.		Approximate yearly total.	
				Lodging.	Fuel and light (average)	Furniture allowance.	Lodging.	Fuel and light (average)	Married.	Unmarried.	Married.	Unmarried.
	£ s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	£ s. d.	£ s. d.	£	£
Lieutenant	1 0 8	1 7	2 0	3 6	1 5	2 0	2 3	1 2	1 11 2	1 7 8	589	506
Captain—	1 5 4	1 7	2 0	4 6	3 0	2 0	3 0	1 8	1 18 5	1 13 6	701	612
After 8 years c.s...	1 8 2	1 7	2 0	4 6	3 0	2 0	3 0	1 8	2 1 3	1 16 5	752	664
After 10 years c.s.	1 10 6	1 7	2 0	4 6	3 0	2 0	3 0	1 8	2 3 7	1 18 9	795	707
Major—	1 15 4	1 7	2 0	4 6	3 0	2 0	4 0	2 3	2 8 5	2 5 2	883	824
After 15 years c.s.	2 0 0	1 7	2 0	4 6	3 0	2 0	4 0	2 3	2 13 1	2 9 10	968	909
After 18 years c.s.	2 2 4	1 7	2 0	4 6	3 0	2 0	4 0	2 3	2 15 5	2 12 2	1011	952
After 20 years c.s.	2 7 0	1 7	2 0	4 6	3 0	2 0	4 0	2 3	3 0 1	2 16 10	1096	1037
Lieut.-Colonel ..	2 14 0	1 7	2 0	4 6	3 0	2 0	4 6	2 3	3 7 1	3 4 4	1224	1174
After 3 years c.s. as such	2 18 10	1 7	2 0	4 6	3 0	2 0	4 6	2 3	3 11 11	3 9 2	1312	1262
Colonel	3 5 10	1 7	2 0	5 6	4 1	2 0	5 6	2 9	4 1 0	3 17 8	1478	1419
Major-General ..	4 9 4	1 7	4 0	11 0	5 2	2 0	11 0	3 8	5 13 1	5 9 7	2064	2000

c.s. = commissioned service.

* Pay Warrant rates as amended by A.O. 196/26 less 6 per cent. from July 1st, 1927, vide A.O. of 1927. The Pay Warrant rates are subject to revision to an extent not exceeding 20 per cent. according to variation in the cost of living. The next revision takes place from July 1st, 1930.

† Rates of allowances vary from time to time and issues are subject to conditions laid down in the Allowance Regulations.

disease, in preventive medicine, and in bacteriology, as well as in the large clinical field open to the specialist in Medicine, Surgery or Gynæcology, in Venereal Disease, and in Ophthalmology. Child welfare is also undertaken systematically by officers of the Royal Army Medical Corps.

At the same time instruction in administration is continuous. The Royal Army Medical Corps is essentially organised for war, and one of the lessons of the Great War was that trained administrators must exist to enable the fullest benefit to be obtained from professional talent. Many appointments carrying administrative responsibility are open to those officers who display capacity for this duty. All officers must be prepared to undertake command and to have a knowledge of Army administration, especially in war. Equally important is the technical training of the Non-commissioned Officers and men of the Corps in such "trades" as Trained Nurse, Nursing Orderly, Masseur, Radiographer, Operating Room Assistant, Laboratory Assistant, Hospital Cook, Dispenser, &c. This training is carried out by the Officers and Nursing Sisters, and opens a large field for those who have ability in lecturing and teaching as well as the power of influencing men.

Promotion.

Promotion takes place automatically to Captain after 3½ years, and to Major after 12 years' service, provided the officer is qualified and recommended for promotion. Promotion to the higher ranks is by selection from those senior in the rank below, but special promotion by brevet or otherwise is open to officers of the Royal Army Medical Corps.

Additional Pay and Charge Pay for R.A.M.C. Officers.

(1) Officer not above the rank of lieutenant-colonel, while acting as specialist in a post considered by Our Army Council to merit the grant of additional pay, according to subjects or groups of subjects as under.

Operative Surgery, advanced; Medicine; Ophthalmology; Gynæcology and Midwifery; Dermatology, and Venereal Disease. Otology, Laryngology, and Rhinology; Radiology; Anæsthetics; Mental Diseases; Hygiene; Pathology; subjects other than above, at the discretion of Our Army Council, 5*s.* daily.

(2) (*a*) Officer in charge of a hospital.—If the number of equipped beds, as certified by the Deputy Director of Medical Services, exceeds—

50 beds	2*s.* 6*d.* daily.	300 beds	7*s.* 6*d.* daily.
150 „	5*s.* 0*d.* „	500 „	10*s.* 0*d.* „

Officer in charge of a medical or surgical division of a general hospital with not less than 300 beds—half the above rates.

	Daily. s.	d.
(*b*) Senior medical officer, Royal Arsenal, not exceeding	10	0
(*c*) Officer in command of the depôt, Royal Army Medical Corps	5	0
(*d*) The senior officer of the Army Medical Services with an army in the field: A rate to be fixed by the Army Council according to the magnitude of the charge.		
(*e*) The officer, if under the substantive rank of colonel, holding the appointment of senior medical officer in a command abroad, or of assistant director of medical services, if the number of soldiers is 1500 or upwards	5	0
(*f*) Adjutant R.A.M.C. Depôt	5	0
(*g*) Adjutant R.A.M.C. (Territorial Army)	2	6

Retirement and Retired Pay.

The following are the rates of pension and retired pay:—

1. Retired pay will consist of two parts: (*a*) a service element based on the officer's total service; (*b*) a rank element for the rank from which the officer retires. An officer with less than 20 complete years' service will not be eligible for retired pay.

2. The scale will be as follows, subject to the reduction of 6 per cent. referred to below:—

(*a*) Service element.—£15 a year for each completed year of service as a medical officer.

(*b*) Rank element.—

Rank from which retired.	After completing 1 year's service in the rank.	After completing each additional year's service.	Maximum rank element.
	£	£	£
Major	12	12	120
Lieutenant-Colonel	150	30	240
Colonel	290	50	390
Major-General ..	440	50	540
Lieutenant-General	590	50	690

The retired pay of an officer retiring with less than or complete year's service in the rank from which he retires wi be assessed as though he had retired from the rank below.

Maximum rates of retired pay (*a*) and (*b*) together:—

	£		£
Captain and Subaltern ..	300	Colonel	80
Major	450	Major-General ..	100
Lieutenant-Colonel ..	600	Lieutenant-General	120

The above rates are those laid down in the Pay Warran They have been reduced by approximately 6 per cent. from July 1st, 1927, and are subject to future variatio with fluctuation in the cost of living.

3. Officers with seven and less than 20 years' service medical officers may be permitted to retire with a gratuity accordance with the following scale:—

After 7 years' service as a medical officer	£10
„ 15 „ „ „ ..	£28
„ 18 „ „ „ ..	£35

THE ARMY DENTAL CORPS.

The Corps is administered by the Director-Genera Army Medical Services. It is a joint service for th Army and Royal Air Force, and personnel is require to serve under either force and be interchangeabl Officers and other ranks posted for duty with th Royal Air Force will perform their duties under th Regulations of the Royal Air Force for the emplo ment of dental personnel, but the conditions in th following tables apply equally in either force. Pr motion is carried out on one general list. Regulatio for admission to the Army Dental Corps should obtained from the Under-Secretary of State, W Office, and carefully studied.

OFFICERS: *Appointment and Promotion.*

1. Commissions as Lieutenants in the Army Dental Cor may be given to persons duly qualified under regulatio approved by the Army Council.

2. An officer shall be eligible for promotion to the rank Captain on completion of three and a half years' service and the rank of Major on completion of 12 years' service in t Corps, provided he has previously qualified in such manr as may be prescribed by the Army Council.

3. Promotion to the rank of Lieutenant-Colonel a Colonel to fill the establishments laid down from time to ti for those ranks shall be made by selection of the Arr Council, provided the officer has previously qualified promotion to those ranks in such manner as may be p scribed by the Army Council.

4. Appointments are in the rank of Lieutenant, except cases where service of three and a half years or more has be given as a temporary dental officer, when the rank of Capt will be given. Service as a temporary dental officer v count towards the three and a half years for promotion captain, and the 12 years for promotion to Major.

Pay.

The following are the rates for officers of the Army Den Corps:—

	Per die £	s.
Lieutenant	0	18
Captain	1	3
Captain { after 8 years' total service	1	6
„ 10 „ „ „	1	8
Major	1	12
Major, after 15 years' total service	1	17
„ „ 18 „ „ „	2	0
„ „ 20 „ „ „	2	4
Lieutenant-Colonel	2	11
Lieutenant-Colonel after 3 years' service as such	2	16
Colonel	3	3

These rates are 6 per cent. below those shown in Pay Warrant, 1926, as amended by Army Order 196

e latter are subject to revision to an extent not exceeding per cent., according to variation in the cost of living. e next revision takes place on July 1st, 1930.

Charge Pay.

The officer in charge of the Dental Laboratories, Aldershot, eives charge pay at the rate of 5*s.* a day if holding the rank Captain, or 2*s.* 6*d.* a day if holding the rank of Major.

Allowances.

The allowances for officers of the Army Dental Corps are the same rates as for officers of the Royal Army Medical ps.

Retirement and Retired Pay or Gratuity.

1) The rates of retired pay will be the same as for officers he Royal Army Medical Corps.

2) Voluntary retirement on retired pay will not be allowed il after twenty years' service.

3) Earlier retirement on gratuity may be allowed :—

After 8½ years'	service as a Dental	gratuity of	£1000.
,, 15 ,,	Officer,	,,	£2000.
,, 18 ,,		,,	£3000.

The aim of the Corps is the prevention of wastage man power on account of dental disease or dental iciency, and, to enable this to be carried out, every ruit is inspected by a dental officer immediately er joining and all necessary treatment carried out. e soldier is re-inspected at least once a year and dental efficiency maintained at the best standard ssible. As recruits are not now enlisted unless y have sufficient natural teeth to enable them masticate efficiently, it is hoped that the conserva- e nature of the treatment they will receive will luce considerably the percentage of artificial tures required.

INDIAN MEDICAL SERVICE.

It is the view of many senior officers in the Service t the period of depression is now passing and that prospect is again bright for those who are fitted physique and disposition for a medical career in lia. The offer of permanent commissions on cially favourable terms to a small number of dical men of European descent who were free to l forthwith to India met last year with the desired ponse, and the number of commissions granted ring the last twelve months is 16.

But the new outlook involves frank acceptance of Indian reform scheme, the essential of which is reasing participation of Indian-born subjects in government of the country, although, so long as ropeans are employed in the various departments the Indian Civil Service, nothing is more certain n that there will and must remain European tors to attend them. India definitely requires ropean assistance, not only for the care of the litary and civil European population, but for the intenance in the country of that spirit of modern dicine which has accomplished already such ghty things, and which day by day is spreading influence and value.

The Government of India issued a communiqué ly this year dealing in detail with the reorganisation the medical services in India. The scheme now ctioned is based on proposals framed in consultation h local governments. The Indian Medical Service, stituted on the same broad lines as at present, will retained primarily to meet the needs of the Indian ny, and in order to maintain two essential requisites namely, (1) the necessary minimum war reserve of dical officers, and (2) the provision for European dical attendance on officers and their families. cal governments in India will be required to employ stated number of I.M.S. officers. It has been culated that the war reserve to be employed by the il side should consist of 134 British and 66 Indian cers, the larger proportion of British officers being e to the fact that they cannot be recruited on ergency in India from the ranks of private practi- ners. Medical attendance on British personnel, and the requirements of civil administration, for which the Central Government is still responsible, involve the provision of a number of employments termed "residuary," the incumbents of which must be retained permanently in civil employment, so as to ensure the continuance under any circumstances of a skeleton staff to cope with civil requirements. The total number of officers required for civil employment in the I.M.S. is now calculated at 302, allotted as follows: war reserve, 200; residuary posts in provinces, 46; foreign and political departments, 17; gaols, 8; special posts under the Government of India, 14; port health officers at Bombay and Aden, 2; reserve of 5 per cent. as allowance for illness, 15. Of this total 212 will be European and 90 Indian. To provide employment for these 302 officers, 237 posts are required, 59 of which will be available under the Government of India, and 178 (of which 112 must be held by British officers) will be provided in the provinces. The estimate of the medical requirements of European medical attendance is based on data which will change from year to year as the proportion of European to Indian civil officers diminishes; it will therefore be subject to scrutiny and revision. The remaining 66 posts will be open either to Europeans or Indians, while 28 out of 59 appointments under the Government of India will similarly be open to officers of either race.

Rules forming an integral part of the reorganisation scheme have been drawn up to safeguard the varied interests of the Indian army, the provincial governments, and the medical officers themselves (vide THE LANCET, May 19th, 1928, p. 1028).

Thus the social effect of Indianisation should not press hardly on the medical service for the reason that European doctors will be chiefly requisitioned in stations with considerable European communities. In these communities the equipment and organisation of hospitals has been steadily improving and men with professional ambition will find positions which will satisfy their aspirations. On the military side the station hospital system has rendered the position of medical officers more independent by making teamwork possible and permitting of specialisation in various departments of medicine and surgery. Lastly, those who join now will have unequalled prospect of advancement in a Service which has been so depleted for 10 or 15 years or more, and the terms of service announced by the Secretary of State for India in 1926 assure conditions of pay, pension, and furlough much superior to those previously offered.

The New Regulations.

Competitive examination remains suspended for the present and admission to the Service is on written application to the India Office. As sound bodily health is a first essential candidates may, if they wish it, undergo a preliminary examination by a Medical Board which meets weekly at the India Office.

Candidates must be under 32 years of age at the time of application, and must possess a qualification registered in Great Britain and Northern Ireland, under the Medical Acts in force at the time of appointment. Arising out of the recommendations of the Lee Commission the Secretary of State for India in Council after consultation with the Government of India has decided that the Indian Medical Service constituted on the same broad lines as in the past shall be retained primarily to meet the needs of the Indian Army. In order to maintain the necessary minimum war reserve of military medical officers, and to provide for European medical attendance for European officers of the Superior Civil Services and their families, local governments will be required to employ a stated number of Indian Medical Service officers. The Government of India will draw on the same Service to meet the requirements of the civil administration for which they are responsible. For the present 237 such posts have been reserved, and including the leave reserve will provide employment

for 302 officers. 212 of these officers will be British medical men and 90 Indians. As the proportion of European to Indian civil officers diminishes these figures will be subject to periodical scrutiny, and, if necessary, to revision. It will be a definite condition of service for all future entrants to the Service that they will be liable to serve on either the civil or the military side. All officers are required to perform two years' military duty subsequent to permanent appointment before they can be considered eligible for civil employment. Executive medical officers in both civil and military employment may attend persons unconnected with Government service provided their duty admits of it. On the military side, however, the opportunities for private practice are not great. Service during the war as a medical or combatant officer, or in a position usually filled by an officer, counts towards promotion and pension so long as the rights of officers who have entered by competition are not interfered with.

Rates of Pay.

The monthly rates of pay for European officers of non-Asiatic domicile in the Service are as tabulated below. The rupee, it may be remembered, has now been definitely stabilised at 1*s.* 6*d.*

Rank and service in rank.	Basic pay.	Overseas pay.	Year of total service.
	Rs.	Rs.	
Lieut.	500	150	First
		150	Second
		150	Third
Captain :—			
1. During first three years' service as Captain.	650	150	Fourth
		£15	Fifth
		£15	Sixth
2. With more than three and less than six years' service as Captain.	750	£25	Seventh
		£25	Eighth
		£25	Ninth
3. With more than six years' service as Captain.	850	£25	Tenth
		£25	Eleventh
		£30	Twelfth
Major :—			
1. During first three years' service as Major	950		
2. With more than three and less than six years' service as Major	1100		
3. With more than six years' service as Major.	1250		
Lieut.-Colonel :—			
1. Until completion of 23 years' total service	1500	£30	Thirteenth and over.
2. During twenty-fourth and twenty-fifth years' total service	1600		
3. After completion of 25 years' total service	1700		
4. When selected for increased pay ..	1850		

Note.—Until the completion of 23 years' total service basic pay is regulated according to rank and service in rank (column 1) which, owing to the system of accelerated promotion, may be in advance of the time-scale of promotion. Overseas pay is regulated solely with reference to length of total service (column 4). In addition to the above rates various allowances are admissible for a large number of special appointments on both the military and the civil side which may be held by members of the I.M.S. Special high rates of pay are also attached to the numerous administrative appointments open to officers in both branches of the Service. The appointment of Director-General, I.M.S., which is held by an I.M.S. officer, carries pay of Rs.3500 per mensem. The appointment of Director of Medical Services in India, carrying pay at Rs.3200 per mensem, may also be held by an officer of the Indian Medical Service.

Initial rates of pay are based on the assumption that the majority of newly appointed officers will be bachelors. An officer, when junior, is liable to more frequent changes of station than later on in his service, and he may therefore be put to considerable expense for transfers if he has a family. Officers who are married before joining may find difficulty in living within their pay during the first few years of their service. Officers in military employment, when in command or second-in-command of the larger station hospitals, receive special allowance. On the civil side there are public health, bacteriological research, and professorial appointments carrying special enhanced rates. Officers on appointment receive an outfit allowance of £50.

Pensions and Allowances.

The rates of pensions are as shown in the table below.

Service.	Rates per annum.	Service.	Rates per annum
After 17 years ..	£400	After 23 years ..	£620
„ 18 „ ..	430	„ 24 „ ..	660
„ 19 „ ..	460	„ 25 „ ..	700
„ 20 „ ..	500	„ 26 „ ..	750
„ 21 „ ..	540	„ 27 „ ..	800
„ 22 „ ..	580		

Note.—The above rates are subject to revision triennially upwards or downwards, to an extent not exceeding 20 per cent. in all, on account of a rise or fall in the cost of living, compared with the year 1919. A deduction of 4½ per cent. on this account has already been made. Nevertheless the full pension of a lieutenant-colonel cannot be cut below the maximum of £700 under the old rules in the case of officers who entered the service before July 1st, 1920.

There are additional pensions not subject to the above reduction ranging from £65 to £350 per annum for officers who have held high administrative appointments as colonels or major-generals.

Officers on appointment are provided with free passage to India, normally by transport. The wives and families of officers who are married prior to the date of the officers' embarkation on first appointment will also be given free passage to India. Officers are granted a certain number of return passages home at Government expense during their career. There are special allowances for officers whilst on study leave.

Further particulars can be obtained on application to the Secretary, Military Department, India Office, Whitehall, London, S.W. 1. Letters should be marked "Recruitment for I.M.S."

ROYAL AIR FORCE MEDICAL SERVICE

THE Air Council attach great importance to attracting into the Service the best type of medical man since on the capacity of the Medical Service depends in a peculiar degree the safety and efficiency of the Air Force. The duties of a medical officer in the Air Force include not only the prevention and treatment of those ordinary diseases to which the personnel of any fighting service are liable, but the special study of the mental and physical stresses imposed on the airman in diverse circumstances and climates—a new branch of medicine which still provides considerable scope for research.

As promotion to the higher ranks of the Service is by selection from officers who are eligible by reason of length of service, and as a certain proportion of the higher ranks will be reserved for purely scientific as opposed to administrative appointments, it will be seen that there are excellent prospects for the young medical officer who exhibits ability and energy in scientific research, as well as for those who develop talents for administration.

The work to be done, therefore, has a high professional interest which, combined with good rates of pay and allowances, offers a career for medical men which should prove both attractive and interesting. The life is one which is certain to appeal to the man of wide outlook who desires opportunities for travel, sport, and games, and can find interest and enjoyment in aviation.

His duties will, as a matter of course, give him flying experience as a passenger, which is necessary for the proper study of the medical problems of aviation and for gaining first-hand knowledge of the conditions under which his comrades serve.

The establishment will consist partly of permanent d partly of short-service officers.

An officer will on first entry be granted a short-rvice commission for a period of three years on the tive list (which may be extended to five years at e discretion of the Air Council if the officer so shes on the recommendation of the Director of edical Services) and of four years in the Reserve of r Force Officers. Selections for permanent com-ssions will be made from officers holding short-rvice commissions, and those who are not ected will be transferred to the Reserve at the piration of their period of service on the active t.

For those entrants who desire it the prospect of taining a permanent commission is approximately within establishment to the rank of Wing Commander will be by selection at any period after 16 years' total service, and that of Group Captain by selection at any period after 22 years' service.

Certain posts in these ranks are reserved for officers fully employed in professional work, such as surgery, pathology, ophthalmology, &c., numbering at present six in all. The number of these posts will be limited only by the needs of the Service and by the necessity of observing a similar proportion between the number of reserved posts and the officers from whom they can be filled, as exists between the total number of higher ranks and the remainder of the medical service. Selections for these reserved posts will be made only from officers professionally qualified to hold them. Officers filling the reserved posts will be

ROYAL AIR FORCE MEDICAL BRANCH: RATES OF PAY AND ALLOWANCES.

Rank.	Pay.* Daily rates. Standard.	Pay.* Daily rates. Current.	Pay.* Per annum (current rate).	Cash allowances at home rates in lieu of quarters, rations, and servant, if not available in kind (per annum).† Married.	Cash allowances at home rates in lieu of quarters, rations, and servant, if not available in kind (per annum).† Unmarried.	Pay plus allowances per annum. Married.	Pay plus allowances per annum. Unmarried.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
ring Officer	1 4 0	1 2 6	410 12 6	156 12 11	141 8 9	567 5 5	552 1 3
ght Lieutenant— ..	1 6 0	1 4 6	447 2 6	206 16 8	159 13 9	653 19 2	606 16 3
After 2 years as such..	1 8 0	1 6 4	480 11 8	206 16 8	159 13 9	687 8 4	640 5 5
After 4 years as such..	1 10 0	1 8 2	514 0 10	206 16 8	159 13 9	720 17 6	673 14 7
uadron Leader— ..	1 14 0	1 12 0	584 0 0	206 16 8	171 17 1	790 16 8	755 17 1
After 2 years as such..	1 18 0	1 15 8	650 18 4	206 16 8	171 17 1	857 15 0	822 15 5
After 4 years as such..	2 0 0	1 17 8	687 8 4	206 16 8	171 17 1	894 5 0	859 5 5
After 6 years as such..	2 4 0	2 1 4	754 6 8	206 16 8	171 17 1	961 3 4	926 3 9
After 8 years as such..	2 8 0	2 5 2	824 5 10	206 16 8	171 17 1	1031 2 6	996 2 11
After 10 years as such..	2 10 0	2 7 0	857 15 0	206 16 8	171 17 1	1064 11 8	1029 12 1
ng Commander— ..	2 15 0	2 11 8	942 18 4	206 16 8	184 0 5	1149 15 0	1126 18 9
After 2 years as such..	2 17 0	2 13 6	976 7 6	206 16 8	184 0 5	1183 4 2	1160 7 11
After 4 years as such..	3 3 0	2 19 2	1079 15 10	206 16 8	184 0 5	1286 12 6	1263 16 3
oup Captain	3 10 0	3 5 10	1201 9 2	282 17 6	255 10 0	1484 6 8	1456 19 2
r Commodore	4 0 0	3 15 2	1371 15 10	337 12 6	310 5 0	1709 8 4	1682 0 10
r Vice-Marshal.. ..	5 0 0	4 14 0	1715 10 0	406 1 3	375 12 11	2121 11 3	2091 2 11

* Except for periods of service under Indian administration. For such periods officers receive pay and allowances at rates d subject to conditions authorised from time to time by the Government of India.

† These allowances are issued only when accommodation, fuel and light, rations, and personal attendance are not available kind. Normally, provision in kind is available for junior officers. "Married" rates of allowances are payable only to married icers who have reached the age of 30 or the rank of Squadron Leader. A colonial allowance is granted in certain commands road. The rates and general scheme of allowances are liable to revision as circumstances may require.

even one. Experience has so far shown that the ficers selected have included the great majority of ose desirous of, and suitable for, retention in the rvice; owing to the fact that the short-service mmission with its gratuity after three or five years in itself an attraction to many entrants who desire enlarge their experience and outlook from the int of view of subsequently entering private practice, who, on entry, have not made up their minds to e adoption of a permanent career in the Service and bsequently find that they would prefer to return civil life.

For certain purposes medical officers may be lowed to count as service their time spent in sident appointments in civil hospitals under certain ll-defined and generous conditions.

Officers who have been selected for permanent mmissions may be permitted to attend for a period t exceeding nine months a post-graduate course general medicine and surgery, tropical and preven-ve medicine, and other special subjects. Such rmission may be granted at any time when the igencies of the Service permit during the first years of service, and when attending these courses ficers will receive full pay and allowances.

New entrants into the Royal Air Force Medical rvice will be commissioned as Flying Officers ledical) and will be eligible for promotion to the nk of Flight Lieutenant (Medical) after two years' rvice. Officers selected for permanent commissions ill normally be promoted to the rank of Squadron ader after ten years' total service. Accelerated omotion may be granted in a limited number of ses to officers who show exceptional ability after e completion of eight years' service. Promotion eligible for selection to the administrative appoint-ments of their rank, and to the highest administrative appointments.

There will be no competitive examination on entry; candidates must be under 28 years of age, be British subjects, the sons of British subjects, and of pure European descent, be nominated by the dean of a recognised medical school or teaching hospital, and will be interviewed personally by the Director of Medical Services, Royal Air Force, before acceptance. Each candidate must produce:—

1. Birth certificate. 2. Medical registration certificate. 3. A declaration containing the following information: (*a*) Age and place of birth. (*b*) That he is a British subject, the son of British subjects, and of pure European descent. (*c*) That he is ready to engage for general service at home or abroad as required. (*d*) The qualifications he is possessed of, and what medical or other appointments he has held (if any). (*e*) That he is willing to fly as a passenger whenever called upon to do so.

Each candidate will be required, before acceptance, to pass a medical examination to ensure that he labours under no constitutional or mental disease or diseases or weakness, nor any imperfection or disability which may interfere with the efficient discharge of the duties of a medical officer in any climate, in peace or war.

On appointment entrants will undergo an initial course of eight weeks, during which they will be given instruction in the special medical aspects of aviation, the organisation and administration of the Royal Air Force, and the general and special duties to be performed by officers in the Medical Branch.

In order to avoid the necessity for further examinations the position of entrants in order of seniority

in the Air Force List will be determined at the end of the initial course by a system of marking and reports on the actual work done during their instruction.

Uniform and Equipment.

Medical officers are required to provide themselves with the uniform, service dress, and mess dress of their rank and with the distinguishing badges of the Royal Air Force Medical Branch. The provision of full dress is entirely optional at present. An allowance of £50 towards the cost of uniform is made on joining to candidates who have not had previous commissioned service in H.M. Forces.

Emoluments.

The emoluments of medical officers of the Royal Air Force are given in outline above. The standard rates of pay and retired pay were drawn up on the basis of the high cost of living in 1919, and 20 per cent. of each of the standard rates is detachable and subject to alteration either upwards or downwards as the cost of living rises or falls. Under this provision the current rates now in force represent a reduction of approximately 6 per cent. on the standard rates. The next revision will take effect from July 1st, 1930, and subsequent revisions will be made at intervals of three years.

RETIRED PAY.

The minimum period of service qualifying for retirement on retired pay is 20 years. Standard rates of retired pay are as follows:—

Air Officers.

Air Vice-Marshal .. .. £790 to £1010 per annum.
Air Commodore .. .. £650 „ £950 „ „

The maximum standard rates of retired pay and the compulsory retiring ages for the several ranks are:—

Rank.	Yearly rate of retired pay.	Compulsory retiring age.
	£	
Air Vice-Marshal ..	1010	60
Air Commodore ..	950	57
Group Captain.. ..	900	55
Wing Commander ..	600	51
Squadron Leader ..	500	48

Retired Pay of Officers below Air Rank.

Age on retirement.	Standard yearly rate of retired pay.	Years of service.	Addition for each extra year of service.*	Deduction for each deficient year of service.*
	£		£	£
40	300	17	15	15
41	337	17	15	15
42	375	18	15	15
43	412	18	15	15
44	450	19	15	15
45	487	19	15	15
46	525	20	15	15
47	562	20	15	15
48	600	21	15	15
49	637	21	15	15
50	675	22	15	15
51	697	22	22	15
52	720	23	22	15
53	742	23	22	15
54	765	24	22	15
55	790	24	22	15

* Limited to five years.

Gratuities.—A permanent officer allowed to retire before having qualified for retired pay may be granted a gratuity provided he has not less than ten years' commissioned service, namely:—

£1500 if he has 10 but less than 15 years' commissioned service.
£2500 „ 15 or more than 15 „ „ „

Short-service officers will be eligible on passing to the Reserve for gratuities on the following scale: £100 for each of the first two complete years of service, £150 for each of the third and fourth complete years and £200 for the fifth complete year; that is:—

For three years' service on the active list .. £350
For five „ „ „ „ .. £700

These gratuities will not be payable to officers granted permanent commissions, but their service on a short service commission will count towards retired pay.

COLONIAL MEDICAL SERVICE.

IN the self-governing Dominions (Canada, Australia, New Zealand, the Union of South Africa, and Newfoundland), and territories under their control, such as Papua and the Cook Islands and in the self-governing colony of Southern Rhodesia, medical appointments are made concerning which information can be obtained from the High Commissioners or Agents-General in London; in North Borneo application should be made to the British North Borneo Company, 17, St. Helen's-place, E.C., for appointments; and those in Sarawak are in the hands of H.H. the Rajah. Much valuable information will be found in the "Professional Handbook," Part II., issued by the Oversea Settlement Office, Caxton House, Tothill-street, London, S.W. 1, price 9*d*.

As a general rule, each Colony or Protectorate has its own public service distinct from that of every other; and it is usually only the higher officers who are transferred by the Secretary of State from one Colony to another. There are three exceptions to this rule: (*a*) The West African Medical Staff, which serves Nigeria, the Gold Coast, Sierra Leone, and the Gambia, is one service. (*b*) The East African Medical Service, which serves Kenya, Uganda, Zanzibar, Nyasaland, Somaliland, and the Tanganyika Territory is one service. (*c*) In practice the medical services of the Straits Settlements and the Malay States may be regarded as one, as the officers may be and frequently are transferred from the Colony to the States or vice versa; the two services are now called the Malayan Medical Service.

The Colonies, Protectorates, and Mandated Territories to which medical officers are appointed by the Secretary of State for the Colonies are (*a*) the West African—viz., Nigeria, the Gold Coast, Sierra Leone, and the Gambia, with the Mandated Territories of Togoland and the Cameroons; (*b*) the East African—viz., the Kenya Colony and Protectorate, Uganda, Nyasaland, Somaliland, and Zanzibar Protectorate; the Tanganyika Territory, and Northern Rhodesia; (*c*) the Eastern—viz., Ceylon, the Straits Settlements and Malay States, Hong-Kong, Mauritius, and Seychelles; (*d*) the West Indian—viz., Jamaica, Trinidad, the Windward Islands, the Leeward Islands, Barbados, and the Bahamas; (*e*) Fiji and the Western Pacific, Cyprus, Gibraltar, St. Helena, British Guiana, British Honduras, Bermuda, and the Falkland Islands; and (*f*) Palestine.

In Ceylon, Mauritius, Jamaica, Barbados, the Bahamas, and Bermuda vacancies are practically always filled locally by the appointment of qualified native candidates, or—in the case of some of the higher posts—by transfer from other Colonies. In the Bechuanaland Protectorate, Basutoland, and Swaziland appointments are usually filled locally. Appointments in Malta are all filled locally. In addition, certain medical appointments in the service of the Government of Iraq are filled with the concurrence, and normally upon the recommendation, of the Secretary of State. Vacancies occur most regularly and frequently in the West African Medical Staff, the East African Medical Service, and the Straits Settlements and Malay States.

All applicants for medical appointments in the gift of the Secretary of State for the Colonies should be under 35 years of age, and must be doubly qualified; preference will be given to those who have held hospital appointments as house physicians and house surgeons; testimonials to character and pro

sional competence will be required, and every icer before being definitely appointed will be dically examined by one of the consulting ysicians of the Colonial Office: Sir William Prout, M.G., O.B.E., and Dr. A. E. Horn, C.M.G., 104, urley-street, London, W. 1; Major-General J. J. rrard, C.B., C.M.G., the Royal Hospital, Kingsdge, Dublin; Dr. Foster Coates, 22, College-dens, Belfast; and Lieut.-Colonel Glen Liston, .E., I.M.S., 33, Comely Bank, Edinburgh, and . C. V. Le Fanu, 33, Rodney-street, Liverpool. pplications for such appointments must be addressed the Private Secretary (Appointments), Colonial fice, 2, Richmond-terrace, Whitehall, S.W. 1.

East African Medical Service.

The Medical staffs of the Kenya Colony and otectorate, the Uganda, Nyasaland, Somaliland, d Zanzibar Protectorates, and the Tanganyika rritory form one service, the members of which e liable to be posted or transferred to any of the pendencies as the exigencies of the service may quire. The preferences of individual officers are, wever, taken into consideration as far as possible. Selected candidates are appointed as medical icers on probation in the first instance for two ars, at the end of which period their appointnts are made permanent if their service has en satisfactory. Unless the Secretary of State rects to the contrary, they are required to tend a course of instruction at the London Liverpool School of Tropical Medicine or the iversity of Edinburgh before taking up their ppointments. If such a course is not taken fore proceeding to East Africa, they are required take it during their first leave of absence. edical officers (but not sanitation officers) are rmitted to take private practice at some stations the understanding that they give precedence to eir official duties. It must be understood that ditions to their income from this source are not ely to be substantial, and that the privilege is ble to withdrawal at any time.

Officers are provided with quarters free of rent or e Government may provide temporary accommodaon, or an allowance in lieu of quarters may be paid. ie salary of a medical or sanitation officer is £600 r annum, rising by annual increment of £30 to 40, and thence by increments of £40 to £920, bject to an efficiency bar at £840. Senior medical ficers and senior sanitation officers are paid on the ale £1000 by annual increments of £50 to £1100. fficers who possess the Diploma in Public Health entering, or who acquire it while in the Service, ceive two special increments in the scale.

Officers of the East African Medical Service are rmitted to retire with gratuity, if they wish, instead waiting to retire on pension as follows: (*a*) After ne years' service, of which at least six must have en spent in East Africa, £1000; (*b*) after 12 years' rvice, of which at least eight must have been spent East Africa, £1250. If an officer elects to retire th gratuity he thereby forgoes all claim to nsion.

The grades and salaries (apart from ordinary edical and sanitation officers) in the medical departents are as follows:—

Kenya.—Director of Medical and Sanitary Services, 500; Deputy Director of Medical Service, £1200; Deputy rector of Sanitary Service, £1200; Deputy Director of aboratory Service, £1200.

Uganda.—As Kenya.

Tanganyika Territory.—As Kenya.

Nyasaland.—Director of Medical and Sanitary Services, 200; Medical Entomologist, £1000–£50–£1100.

Zanzibar.—Director of Medical and Sanitary Services, 400; Deputy Director of Sanitary Service, £1200: Resint Surgical Officer, £1000–£50–£1100.

Somaliland.—Principal Medical Officer, £1000–£50–£1100.

There are also the following posts:— Resident rgical Officers (Kenya and Uganda), £1200; pecialist Officer, Sleeping Sickness (Uganda), £1150; Medical Superintendent and Principal of Medical School, Mulago Hospital (Uganda), £1150; Sleeping Sickness Officer (Tanganyika Territory), £1000–£50–£1100; Senior Bacteriologists (Kenya and Uganda), £1000–£50–£1100.

Sanitation officers are selected from the ranks of medical officers as occasion arises.

Asia.

Straits Settlements and Federated Malay States.—European medical officers are appointed on the following scale of salaries: $500 per mensem, rising to $550 per mensem during three years' probation; then, if they are placed on the pensionable establishment, rising to $575 per mensem, and thence by annual increments of $25 per mensem to $800 per mensem, with a strict efficiency bar at $600 per mensem. Officers possessing the D.P.H. receive an additional allowance (non-pensionable) of $100 per mensem.

Above the concluding figure of $800 per mensem there are certain higher appointments, as follows: Principal Civil Medical Officer, Straits Settlements, and Principal Medical Officer, Federated Malay States, $1200 per mensem; Director, Institute for Medical Research, Federated Malay States, Chief Health Officer, Federated Malay States, and Principal Medical College, Straits Settlements, $1100 per mensem; Senior Surgeon, Singapore, $1050 per mensem; 3 Chief Surgeons, Federated Malay States, $1000 per mensem; Medical Officer and Ophthalmic Surgeon, $1000 per mensem; 6 posts at $1050 per mensem; and 17 posts at $850 per mensem, rising annually by $30 to $1000 per mensem. There are also 14 medical appointments, including several senior posts, in the Unfederated Malay States.

The following temporary allowances are at present paid to all officers recruited from Europe in the Government Services of the Straits Settlements and Federated Malay States: unmarried officers, 10 per cent. of salary; married officers, 20 per cent. of salary. Private practice by Government medical officers is not allowed, but consultation work with another practitioner is permitted. Information about general conditions in Malaya is obtainable from the Malay States Information Agency, 57, Charing Cross, S.W. 1.

Seychelles.—The chief medical officer receives Rs.7000 per annum. There are four assistant Government medical officers, two receiving Rs.6500, the others Rs.3000 per annum.

Hong-Kong.—The present establishment of the medical department is: director of medical and sanitary services, £1200–£50–£1450; deputy director, £1125–£25–£1200; senior medical officer, £1025–£25–£1100; three medical officers of health, £740–£30–£1040; health officer of the port, and second health officer of the port, £740–£30–£1040; five medical officers, £600–£30–£1020; bacteriologist, £800–£1100; assistant bacteriologist, £740–£30–£1040; radiologist, £740–£30–£1040; analyst, £625–£25–£900; assistant analyst, £400–£25–£700. A temporary allowance on a scale varying with the sterling exchange value of the dollar is at present payable. Salaries are converted locally at the rate of 2*s.* = $1. Free quarters are not provided, but in certain instances a rent allowance is paid by the Government.

America.

British Guiana.—There are the following posts in the medical service of the Colony: one surgeon-general, £1000–£1200 per annum, with consulting practice; one medical officer of health, £900; ophthalmologist, £700; one bacteriologist and pathologist, £700; 37 medical officers at £500–£25–£700. Most of the senior posts in institutions carry duty allowances (varying from £50 to £300 per annum) and quarters.

Trinidad and Tobago.—In Trinidad and Tobago there are about 40 appointments. Government medical officers receive salary at the rate of £400

per annum, rising by annual increments of £25 to £600. An officer appointed to a district receives, in addition to his salary, a travelling allowance varying from £100 per annum in a normal district to £150 per annum, and is allowed private practice, the value of which is estimated at from £50 to £800 per annum. Officers employed in institution work receive a duty allowance varying from £50 to £300. Medical officers having completed 10 years' resident service are pensionable at the age of 55.

Windward Islands (Grenada, St. Lucia, St. Vincent). There are over 25 appointments. The chief medical officer, Grenada, receives £750. The chief medical officer, St. Lucia, receives £600–£700 plus forage and subsistence allowances; the post is pensionable, but private practice is not allowed except as a consultant. Most of the remaining appointments are district appointments with the right to private practice attached; the salaries paid by Government are on the scale from £400–£500, except in St. Vincent, where the maximum is £450. The Governor has the power to transfer a medical officer from one island to another. Appointments are pensionable.

Leeward Islands (Antigua, St. Christopher and Nevis, Dominica, Montserrat, Virgin Islands).—The appointments are similar in number and character to those in the Windward Islands, and are pensionable. An officer when first sent out is not appointed to a particular island but to the service of the Leeward Islands, with a salary of £350, and is later appointed to a definite district at a salary varying from £312 to £400–£25–£450, and the Governor decides as to the district which is to be allotted to him, according to station. He is liable to be transferred at the Governor's discretion to any medical district in the Leeward Islands. The medical officers, except in St. Christopher and Nevis, receive fees for successful vaccinations, post-mortem examinations, evidence at courts of justice, certificates of lunacy, and, in the larger islands, for burial certificates. They are also, as a rule, allowed private practice. The chief medical officer, St. Christopher and Nevis, receives £700–£25–£750, but is not allowed private practice, except as a consultant.

British Honduras.—There are seven medical appointments (besides the post of principal medical officer) at a salary of $2430 per annum with increments of $120 to $3150. Unless they already possess a diploma of public health, medical officers are liable to be required, before they join the colony, to undergo a course of instruction at a laboratory of public health or analogous institution. The value of the dollar is the same as that of the United States dollar.

Other Overseas Appointments.

Fiji.—The Chief Medical Officer receives £1000–£50–£1100, with free quarters, unfurnished; the Medical Superintendent, Colonial War Memorial Hospital, £800–£50–£1000, with £40 car allowance and free quarters; the Medical Superintendent, Leper Asylum, £750–£50–£950, with completely furnished quarters and one servant; the Medical Officer of Health, £750–£25–£900, no quarters provided. There are 14 District Medical Officers who receive £500–£25–£725, with partly furnished quarters or £50 house allowance (at the option of the Government) and duty allowance of £50 per annum in districts where no private practice exists. In certain districts house allowances or car allowances are granted. In others a medical officer is provided with a launch or boat. District Medical Officers are allowed private practice on the understanding that their official duties are not neglected. In five districts the Medical Officer is also District Commissioner and receives an additional allowance of from £175 to £275 and free partly-furnished quarters. In most districts there is private practice, the value of which has been estimated at from £100 to £600 a year.

Western Pacific High Commission.—The staff in the British Solomon Islands Protectorate consists of a Senior Medical Officer (£650–£750), two District Medical Officers (£550–£650), and one Travelli Medical Officer (£550–£650). Partly-furnished qu ters are provided and a local allowance of £50 annum is paid to the Senior Medical Officer and t District Medical Officers. A local allowance of £ consolidated travelling and subsistence allowar £200, and partly-furnished quarters are provided the Travelling Medical Officer.

In the Gilbert and Ellice Islands Colony there a Senior Medical Officer (£650–£750), with part furnished quarters, and one Medical Officer (£60 £25–£650), with partly-furnished quarters or ho allowance. There is hardly any private pract in the British Solomon Islands Protectorate or t Gilbert and Ellice Islands Colony.

Cyprus.—There is a chief medical officer paid at t rate of £750, rising by annual increments of £25 £850, and three district medical officers paid at t rate of £500 a year, rising by annual increments of £ to £600 a year, all enjoying private practice (exce the chief medical officer and one of the distr medical officers, who are allowed consulting pract only). There is also a post of consulting surge £400–£20–£600 a year, with consulting practi There is also a medical officer of health on £6 rising by £20 increments to £750 without priv practice, and a specialist in venereal diseases wit salary of £700 a year and consulting practice; th are the only medical appointments open to Brit candidates.

Gibraltar.—There is a surgeon of the Colon Hospital receiving £730, and private practice. Th are also two assistant surgeons with a salary of £6 for 3 years and thereafter £650–£25–£700 per annu who are allowed private consulting practice on Free quarters, unfurnished, are provided for all th officers.

St. Helena.—The colonial surgeon at pres receives £550 per annum, fees estimated at about £ a year, and £30 horse allowance. The assistant colon surgeon at present receives £500 a year and £30 ho allowance. Private practice is allowed, and su practice, together with the duties of non-Governm appointments, is divided between the colonial surge and the assistant colonial surgeon in a proporti approved by the Governor. The value of priv practice and appointments is estimated at ab £536 a year.

Falkland Islands.—There are two appointmen The colonial surgeon is paid at the rate of £600 annum, with free furnished quarters. The assist colonial surgeon is paid at the rate of £500 per annu with an allowance of £50 per annum in lieu of quarte Private practice is shared between the colonial surge and the assistant colonial surgeon. The office colonial surgeon is pensionable. The medical serv of this colony is now under review.

Palestine.[1]—The grades and salaries of hig appointments in the Department of Health a Director, £P.1200, plus £P.200 expatriation allowan Deputy Director, £P.900–50–£P.1100, plus £P.1 expatriation allowance. Assistant Director (Labo tories), Specialist Surgeon,[2] and five Senior Medi Officers, £P.750–25–950, plus £P.100 expatriati allowance. One Senior Medical Officer and Gove ment Analyst, £P.550–25–750, plus £P.100 expatr tion allowance. The remainder of the staff recruited locally. A temporary and variable cost-living allowance is at present payable in addition the salaries stated above.

Iraq.—The grades and salaries of the princi appointments in the Department of Health a Inspector-General of Health, Rs.1800–100–2800 month; Health Specialists, Directors of Hospit and Institutes, Chief Medical Officers in Mosul a Kirkuk, Medical Officers of Health in Baghdad a Basra, Rs.1500–75–1800–100–2300 a month; Medi Officers, Rs.1200–75–1800 a month. Posts in t

[1] £P.1 = £1 sterling.
[2] A certain amount of private practice is allowed.

ice of the Government of Iraq are not pensionable. ry officer (unless serving on a 3 years' contract) quired to contribute one-twelfth of his pay to a ident fund, to which the Government makes a ribution equal to one-sixth of his pay.

Leave and Pensions.

eave and Passages.—Leave of absence in East ca. The normal tour of service is 20 to 30 ths (less in Somaliland) after which leave is ted with full salary for 2½ to 3½ days, according he districts in which the officer has served, for month of service, plus the period of the voyage England. If the officer is returning to East ca for further service, he receives a further similar unt of leave, plus the period of the voyage to t Africa. Extensions of leave with full salary given in case of sickness or in the case of officers nding approved courses of instruction. In ition to the above, local leave may be granted to 14 days a year. Officers serving in Northern desia are allowed four (or two) days' leave in ect of each month of service. Free first-class ages are provided for the officer on first appoint- t and on leave, and in certain cases assistance ards family passages is given.

the Malay Peninsula two months' leave of absence full salary may be granted in respect of each 's service, and this leave may be accumulated up maximum of eight months. Additional leave on -pay may be granted on special grounds. Officers provided with free passages on first appointment themselves and their families (i.e., wife and lren up to five persons, inclusive of the officer). er temporary regulations at present in force, return passages on leave to all officers (and their s and their children under the age of 10) irrespec- of salary.

other Colonies outside Tropical Africa, subject he necessities of the service, leave of absence on salary may be granted after a period of three s' resident service without any special grounds. ay be given before the expiration of that period in of serious indisposition, or of urgent private rs. In the absence of special grounds, the leave t not exceed one-sixth of the officer's resident ice; on special grounds it may exceed that period ix months. In addition to the above, vacation e on full pay may be granted, if no inconvenience xpense is caused thereby, not exceeding three ths[3] in any two years. British Guiana, Jamaica, Trinidad officers are allowed to accumulate pay leave at the rate of six weeks for each year's ice up to six months, exclusive of the period of voyages to and fro, and no leave of absence (except in very special circumstances) exceed months in all unless the officer has served for years or more without leave, in which case two ths on half-pay may be taken in addition to months' full-pay leave.

n first appointment an officer will, except in case of a few Colonies possessing Representative mblies, be provided by the Crown Agents for the nies with free passages to the Colony for himself his wife and children, if any, not exceeding four ons besides himself. The officer so appointed be required to execute an agreement binding him pay the cost of the passage or passages so obtained e event of his leaving the Government service in three years. An officer taking leave out of Colony has in most cases to provide his own ages.

nsions.—East Africa.—Officers on the pension- establishment may retire (or be retired by Government) on attaining the age of 50 years; they may be retained in the service, with their consent, for such further period as the Govern- t may recommend. Earlier retirement in the t of ill-health is also provided for. Pension is computed at one-four hundred and eightieth of pensionable emoluments—i.e., salary and value of free quarters [4] in respect of each month's pensionable service—at the time of retirement, subject to an average of emoluments for the last three years before retirement instead of the actual emoluments at the time of retirement being taken as the basis for calculation in certain circumstances.

Other Colonies.—In most of the other Colonies an officer holding a pensionable appointment may be allowed in the case of ill-health to retire on a pension after ten full years' resident service; otherwise he must have attained the age of 55. For ten full years' resident service fifteen-sixtieths of the average annual salary of the retiring officer's fixed appointments for three years prior to retirement may be awarded, to which one-sixtieth may be added for each additional year's service; but no addition will be made in respect of any service beyond 35 years. For pension purposes absence on vacation leave counts as full service, and leave on half-pay as half service. In a few cases the retiring age is 60 and the pension after ten years' service is ten-sixtieths instead of fifteen. In the Straits Settlements and Malay States, an officer may, with the consent of Government, retire at age 50. Pensions are calculated on a basis of length of service in months instead of years.

West African Medical Staff.

Applicants for appointment as medical officers or medical officers of health in the West African Medical Staff (the higher grades will usually be filled by promotion from the lower) must be British subjects of European parentage and between 23 and 35 years of age; preference is given to candidates who are over 25 years of age. Applicants must possess a complete double qualification, and must be on the Medical Register. Passages for wives and children are not provided by the Government, and houses for the wives of junior medical officers are rarely available. Officers are not usually allowed to take their wives and young children out with them until they have acquired experience of the local conditions and have obtained the sanction of the Governor. When an officer has obtained permission to be accompanied by his wife a grant of one-half the cost of his wife's passage to and from West Africa is made subject to certain conditions.

Candidates whom it is proposed to select for appointment will have to be medically examined by one of the medical advisers of the Colonial Office (or, in the case of those residing in a Colony, by a medical officer appointed by the Colonial Government), and no appointment will be made unless the candidate is declared to be physically fit for service in West Africa. Candidates are allowed to express a preference for any particular Colony, and their wishes in this respect will be borne in mind and met as far as possible, but they are liable to be posted in the first instance, or transferred afterwards if necessary to any other West African Colony at the discretion of the Secretary of State. Candidates who wish to be posted to Nigeria will probably find it useful to be able to ride. Transfers from one Colony to another will be made as seldom as possible. Candidates should on no account apply for, or accept, a West African appointment in the expectation of ultimately being transferred.

Those transferred to pensionable Crown appointments elsewhere than in West Africa do not forfeit their claim to pension in respect of their West African service on final retirement, provided that they have been members of the staff for at least 12 months. Every officer selected for appointment is required to have himself revaccinated before proceeding to West Africa, unless one of the medical advisers of the Colonial Office certifies that this is unnecessary.

[3] or, in the case of Fiji and the Western Pacific and the and Islands 4½ months in any three years.

[4] The value of free quarters for pension purposes is taken as 15 per cent. of the minimum salary of the grade in which an officer is serving at the time of retirement, subject to a maximum of £150.

Instruction in Tropical Medicine.—Every candidate selected for appointment will, unless the Secretary of State decides otherwise, be required to undergo a course of instruction either at the London School of Hygiene and Tropical Medicine, Endsleigh-gardens, N.W. 1, or at the Liverpool School of Tropical Medicine, Liverpool University, or at Edinburgh University. The cost of tuition will be borne by the Government, but candidates must make their own arrangements for board and lodging; an allowance of £25 a month will be paid to them monthly in arrear while they are under instruction. Payment of the allowance will be made subject to the candidate signing an agreement by which he is bound to refund it (1) if he declines to accept an appointment in any of the Colonies for which he may be selected; (2) if he fails to obtain a certificate or diploma; (3) if he relinquishes the Service for any other reason than mental or physical infirmity, or is removed for misconduct, within three years of his arrival in West Africa.

If at the end of the session there exists no vacancy in the Staff to which a candidate can be appointed, he will be placed in a Reserve and granted an allowance at the rate of £200 a year until the occurrence of a vacancy.

Leave of Absence.—European officers in West Africa may be granted vacation leave on full salary not exceeding in all one week's leave in the United Kingdom for every completed calendar month of total residential service in West Africa, plus the time necessarily taken on the journey to the United Kingdom, and, if the officer is returning to West Africa for further service, the time necessarily taken on the journey from the United Kingdom to the Colony. Vacation leave may be granted without any special grounds after 18 consecutive calendar months of residential service in West Africa. An officer will not be required to serve a tour of more than 24 consecutive calendar months' residential service except in special circumstances; and the Governor may grant vacation leave to any officer at any time after he has completed 12 consecutive calendar months' residential service within the above limits, the actual length of each officer's tour will be at the discretion of the Governor. Vacation leave on full salary may also be granted to an officer if he is invalided from West Africa after less than 12 consecutive calendar months' residential service, and sick leave on full salary may be granted for any period not exceeding six calendar months.

Appointments and Salaries.—Medical officers for the West African Colonies and Protectorates—namely, the Gambia, Sierra Leone, the Gold Coast (including Ashanti and the Northern Territories), and Nigeria (Southern and Northern Provinces)—are selected by the Secretary of State for the Colonies, and are on one list for employment and promotion. The grades and emoluments of the Staff are at present as follows:—

The Director of the Medical and Sanitary Service, Nigeria, receives a salary of £1800 a year, with a duty allowance at the rate of £360 a year. The Director of Medical and Sanitary Service in the Gold Coast receives a salary of £1600 a year, with a duty allowance at the rate of £320 a year. The Director of Medical and Sanitary Service in Sierra Leone receives a salary of £1400 a year, with a duty allowance at the rate of £280 a year. The Deputy Director of Medical and Sanitary Service, Nigeria, and the Deputy Director of Sanitary Service, Nigeria, receive salaries of £1500 a year, with duty allowances at the rate of £300 a year. The Deputy Director of Medical and Sanitary Service, Gold Coast, and the Assistant Director of Medical and Sanitary Services, Nigeria, receive salaries of £1400 a year, with duty allowances at the rate of £280 a year. Assistant Directors Medical Service: There are seven appointments on this grade, five in Nigeria, two in the Gold Coast. The salary is at the rate of £1300 a year, with duty allowance at the rate of £260 a year. The Assistant Director of Sanitary Service, Nigeria, the Deputy Director of Sanitary Service in the Gold Coast and the Deputy Director of Sanitary Service in Sierra Leone receive salary at the rate of £1300 a year, with duty allowance at the rate of £260 a year. Specialists: The number of these appointments is not fixed, officers of outstanding professional merit being eligible for appointme The salary is at the rate of £1300 a year, with du allowance at the rate of £260 a year. After f years' approved service as such, the specialist offi is eligible to receive a salary at the rate of £1400 a y with duty allowance at the rate of £280 a year. T are at present five officers appointed specialists in Nig three in the Gold Coast, and one in Sierra Leone. Se Medical Officer: There are twenty appointments of t grade, with salary at the rate of £1000 a year, rising annual increments of £50 to £1150 a year, and senior allowance at the rate of £100 a year. The Senior Medi Officer, Gambia, is allowed "staff pay" of £150 a year, addition to duty allowance, but he is debarred from priv practice. Senior Sanitary Officer: There are nine appoi ments of this grade, with salary at the rate of £1050 a ye rising by annual increments of £50 to £1200 a year, and duty allowance at the rate of £210 a year. Possession of Diploma in Public Health is usually required for appoi ment to this grade. Special facilities are granted to study the diploma during leave. Medical Officers of Healt There are at present 24 appointments of this grade. T salary scale is the same as that of Medical Officers, exc that Medical Officers of Health are granted an ini salary at the rate of £800 a year, together with senio allowance at the rate of £72 a year and staff pay at rate of £150 a year, half of which is payable during lea After three years' service on the maximum of the sc viz., £960 a year, and on undergoing an approved cours study, Medical Officers of Health are eligible, if unpromot subject to the recommendation of the Governor, to be pla on the scale £1000 a year rising by annual increments £50 to £1150 a year, together with seniority allowance the rate of £100 a year and staff pay as before. The hold of these appointments are not allowed private pract Candidates selected for service as Medical Officers of Hea must obtain the Diploma in Tropical Medicine and Hygi of Cambridge, London, or Liverpool as a condition of appo ment, or must be in possession of the Diploma in Pul Health. They are appointed subject to the condition th if after a period of service in West Africa they are conside unsuitable to serve in that capacity, they may be called u to transfer to the medical side. In such cases the offi are given the rate of salary which they would have reac if they had been appointed to be Medical Officers instead Medical Officers of Health in the first instance. Med Officer: The salary attached to this grade is at the rate of £ a year, rising by annual increments of £30 to £720 a y Then, if confirmed in the appointment, £720 a year, rising annual increments of £40 to £960, with seniority allowanc the rate of £72 a year. Before passing £800, medical offi are required to take a special course of study for three mon If they obtain satisfactory certificates at the end of course they draw their further increments up to £960 a y

A medical officer who has served for three years the maximum salary of this scale (£960) with obtaining promotion is eligible, if recommended the Governor, to be placed on the scale £1000–£ £1150, with £100 seniority allowance (as for Se Medical Officers).

Special Appointments.—The Director of the Medi Research Institute, Lagos, and the Director the Medical Research Institute, Accra, receive a sal of £1300 a year, with a duty allowance of £26 year, rising after five years' approved service t salary at the rate of £1400 a year and duty allowa at the rate of £280 a year. There are a number appointments for pathologists and bacteriologists Nigeria and the Gold Coast. The salary and ot conditions attached to these posts are similar to th of Medical Officers of Health. Duty allowan seniority allowance, and staff pay are not pensiona emoluments.

Increments.—Increments to salaries are pay only when the service of an officer during the pe of employment qualifying for increment is approv

Payment of Salaries.—Information as to the p ment of officers' salaries or of monthly remittance persons in England may be obtained from the Cr Agents for the Colonies, 4, Millbank, S.W. 1. allowances are paid locally.

All officers of the staff, except directors, dep directors, assistant directors, senior sanitary offic medical officers of health, research officers, an few other officers holding special appointme are at present allowed to take private pract provided that it does not interfere with the fait

d efficient performance of their official duties, but is within the power of the Governor to withdraw suspend the privilege in such places and for ch periods as he may consider desirable. Private actice does not exist at many stations, and no arantee can be given that an officer will be posted a station in which he will be able to practise ivately. As a general rule, and subject to the igencies of the service, stations where there is private actice are allocated to senior members of the Staff.

Pensions and Gratuities.—Pensions and gratuities on tirement are granted in accordance with the law and gulations of each individual Colony.

Fuller information can be obtained from the Private cretary, Colonial Office, 2, Richmond-terrace, ndon, S.W.1.

Sudan Medical Service.

This Service is responsible for carrying out civil, edical, and public health duties in the Sudan.

The staff consists of: (*a*) A Director, pay £1500–000. (*b*) A Senior Physician and a Senior Surgeon the Khartoum and Omdurman Civil Hospitals, ch with a pay of £1200–£1750. (*c*) An Assistant irector and Medical Officer of Health, Khartoum ovince, pay £1200–£1750. (This latter post is mporary, and the terms and duties are subject to teration). (*d*) 31 British "Senior Medical Inspectors" and "Medical Inspectors," whose pay comences at £720 and rises, subject to the recommendaon of the Director, by five biennial increases to 080, and after 13 years' service to £1200. The nior Medical Inspectors are eligible, by selection, r the four senior posts. All Medical Inspectors are ppointed, in the first place, on probation for two ars, and if at the end of that time they are accepted r permanent service under the Sudan Government, e first increase of pay is subject to their passing examination in Arabic.

In addition to the above there are (*e*) a number Medical Officers trained at one of the Syrian edical Schools, besides (*f*) Sudanese Medical Officers ained at the School of Medicine at Khartoum. here are several native (*g*) Assistant Medical Officers, ho have been given a purely practical training in ne of the larger hospitals in the Sudan.

Amongst the attractions of the Service are: The eat variety of the work met with among many fferent races of the Sudan; *leave* of 90 days, hich is granted every year after the first 18 months service; *study-leave*, which may be given for some finite purpose, whilst two years towards pensionable rvice may be granted to those who have special ualifications and experience. The pension for edical Inspectors who retire after 20 years' service not less than £E.500 a year. If, however, he rves for a longer period, or is appointed to one of ne higher posts, he will receive a larger pension. rivate practice is allowed, but is limited to a few the larger towns, and may be carried on so long s it does not interfere, in any way, with official uties. These duties include acting as consultant the principal hospitals and the supervision of edical and public health work, the inspection of hools, the examination of candidates for Government rvice and pension, and the training of Assistant edical Officers and native Sanitary Overseers. he Khartoum Medical School is staffed, mainly by embers of the Medical Service, who receive an dditional remuneration of £250 a year for their ork as teachers. A Registrar of the Medical School also selected from the Service, who receives £250 a ar extra pay.

The country is developing rapidly, and the Medical epartment is being increased to meet its growing quirements. Vacancies are always advertised in HE LANCET as they occur.

Candidates must be single and under 30 years f age, and they must have held a resident post, referably that of house surgeon, in a large general ospital. As a rule they are required to take out a ourse in Tropical Medicine before they leave England for the Sudan. The fees for this course are paid by the Sudan Government, and in addition, an allowance of £4 15*s.* per week is made, under certain circumstances, to each selected candidate who attends it.

Inquiries for further information should be made to Dr. Acland, 19, Bryanston-square, London, W. 1, or to the Deans of the principal medical schools.

WOMEN'S MEDICAL SERVICE FOR INDIA.

Among careers open to medical women abroad the Women's Medical Service for India deserves honourable mention. This service is open to fully qualified medical women of British or Indian nationality, and with the present amount of Government subsidy the number of medical officers is limited to 44. Medical women proceeding to India to join the Women's Medical Service receive a sufficient sum for a first-class passage to India. On landing they are posted to one of the larger women's hospitals to gain Indian experience and to learn the language. During this period (from six months to two years) private practice is not allowed. For a further period they are appointed to act temporarily for medical women on furlough, during which time private practice is allowed. They are then definitely appointed to the charge of hospitals. Private practice is always allowed after the first two years, provided it does not interfere with official duties. The only exception is in administrative or educational posts, when an allowance in lieu of practice is given. The amount obtained from practice varies according to the station, but in most cases it forms a fair addition to the salary, varying from £150 to £1000 a year.

Excellent opportunities for surgery—especially gynæcological—are found in the Women's Medical Service. To those who are not keen surgeons opportunities are likely to open in the future in connexion with maternity and child welfare; medical women with administrative ability are also needed for the inspection of women's hospitals and other medical institutions.

Rates of pay are as follows:—

Years of service.	Overseas allowance per mensem.	Salary per mensem.	English equivalent* per annum.
1 to 3	Rs.100	Rs.450	£440
4 to 6	„	Rs.500	£480
7 to 9	„	Rs.550	£520
10 to 12	„	Rs.600	£560
13 to 15	Rs.150	Rs.650	£600
16 to 18	„	Rs.700	£640
19 to 21	„	Rs.750	£680
22 to 24	„	Rs.800	£720
over 24	„	Rs.850	£760

* At rupee value 1*s.* 4*d.*

Furnished quarters are provided, representing an additional Rs.150 per mensem.

The cost of living in India is much higher than formerly, but it should be possible for a medical woman (with house provided) to meet actual household expenses for about Rs.200 per mensem, leaving the remainder of her salary for dress and personal expenses. To this must be added the necessary saving to meet additional expense for furlough and leave spent in the hills.

One month's privilege leave on full pay is granted each year. Furlough on half-pay at the rate of two months for every year of service is granted after every three years. Study-leave on two-thirds pay is granted to the extent of 12 months in the total service. There is a provident fund to which members of the service contribute 10 per cent. of their pay. The service contributes another 10 per cent., which accumulates at interest and is repaid on retirement.

Admission to the service is made by selection. Candidates in the United Kingdom should apply to the Hon. Secretary, United Kingdom Branch of the Countess of Dufferin's Fund, care of Major-General J. B. Smith, India Office, Whitehall, London.

SPECIAL DIPLOMAS.

DIPLOMA IN TROPICAL MEDICINE.

ALTHOUGH a qualification in tropical medicine has not been made registrable by statute, a diploma is regarded as indispensable for appointments in the Colonial Medical Service and similar positions abroad. Systematic instruction for these diplomas is given at the Incorporated Liverpool School of Tropical Medicine (founded in 1898) and at the London School of Hygiene and Tropical Medicine, 23, Endsleigh-gardens, Euston-road, N.W.; while the Universities of Cambridge, London, Edinburgh, and the English Conjoint Board grant the diploma.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (*University of London*).—The Departments of Bacteriology and Immunology under Prof. Topley, and of Epidemiology and Vital Statistics under Prof. Greenwood, will continue their advanced courses of study in October next, the Bacteriology course (covering the new Diploma) at 6, Gordon-square, W.C., and the Epidemiology course at the National Institute for Medical Research at Hampstead. The existing Departments of the School dealing with the courses of study for Tropical Medicine and Hygiene will continue for the present in the building occupied by the Hospital for Tropical Diseases at Endsleigh-gardens. There are two such courses in the year, each lasting 20 weeks, inclusive of examinations. The dates for the commencement of each course are Oct. 1st, 1928, and March 11th, 1929, respectively. The course covers the work required for the D.T.M. and H. (England) and part of that required for the M.D. in Tropical Medicine of the University of London. For facilities for clinical and pathological study the School is indebted to the Seamen's Hospital Society, who, prior to August 1st, 1924, were responsible for the London School of Tropical Medicine. The new building in which the School will be housed is approaching completion, and the formal opening and the commencement of the new courses of study (in particular that of the D.P.H.) will probably be in the summer or autumn of next year. Research studentships and scholarships are available, and full particulars with regard to these and the courses of study generally may be obtained from the Secretary of the School, Malet-street, London, W.C. 1.

University of Liverpool.—The University grants a Diploma in Tropical Medicine. At the end of each full course an examination is held by the University for its Diploma of Tropical Medicine (D.T.M.), which is open only to those who have been through the course of instruction of the school. The subjects of examination are (*a*) Tropical Pathology, Tropical Parasitology; (*b*) Entomology; (*c*) Tropical Hygiene and Sanitation; (*d*) Tropical Medicine, including Ætiology, Symptoms, Diagnosis, and Treatment of Tropical Diseases. The advanced course consists entirely of Practical and Clinical Laboratory Work, given at the laboratory at the University. Applications should be made to the Dean of the Medical Faculty, University of Liverpool.

The University also grants a diploma in Tropical Hygiene (D.T.H.). The subjects of examination are Bacteriology, Chemistry (including Meteorology and Climatology), Parasitology and Entomology, Tropical Sanitation (including Sanitary Engineering), Practical Sanitation, Sanitary Engineering, Statistics. Two University Fellowships of £100 a year each are open to students of the school, amongst others. Accommodation for research work is to be had at the University Laboratory. The Mary Kingsley Medal is awarded by the school for distinguished work in connexion with Tropical Medicine.

University of Cambridge.—The examination for the Diploma in Tropical Medicine and Hygiene is divided into two parts. Part I. is held in Cambridge in April and Part II. in July in London. Candidates for Part I. are examined under the same regulation and in the same subjects as candidates for the Diplom in Public Health, but any qualification in medicin or surgery recognised by the proper authority of an country outside the British Dominions may b recognised. The subjects for Part II. are Medicin Surgery, and Hygiene in their relation to Tropica Disease.

The examination will be partly in writing, partl oral, and partly practical or clinical (the clinica part will be conducted at a hospital for tropica diseases, at which cases will be submitted for diagnos and comment). Every candidate who passes th examination to the satisfaction of the examiners wi receive from the University a diploma (D.T.M. & H testifying to his knowledge and skill in tropica medicine and hygiene.

Further information respecting the courses of stud and examinations may be obtained from Mr. J. Purvis, Public Health Chemical Laboratory, Can bridge.

University of Edinburgh.—Candidates for th Diploma in Tropical Medicine and Hygiene mus be graduates in medicine and surgery of the Universit of Edinburgh or hold corresponding registrab degrees or qualifications of some other licensin body. The course of instruction, comprising primary and a second course, is given during th autumn and spring terms, October to March, an includes Tropical Hygiene, Bacteriology, Entomolog and Parasitology, Diseases of Tropical Climat (systematic and clinical), Tuberculosis, and Venere Diseases. The primary course alone is also give during the summer term, April to June. Provisio is made in the University for instruction in all subject The examinations are written, oral, and practica and are held at the end of the courses. Candidat are required on the first occasion of presentin themselves for examination to appear for all th subjects. Candidates who fail to pass the enti examination within a period of 12 months after fir appearance are required to reappear for all th subjects. The University is included in the list Institutions whose courses of instruction in Tropic Medicine may be taken by officers on appointmen to the Colonial Medical Services or during study-leav Full particulars can be obtained from the Dean the Faculty of Medicine.

Conjoint Board R.C.P. Lond., R.C.S. Eng.—Th diploma of D.T.M. & H. Eng. is awarded on th results of an examination held twice yearly, February and July. Candidates must possess registrable qualification, and produce evidence having attended (1) practical instruction in patholog protozoology, helminthology, entomology, bacteri logy, and hygiene in relation to tropical medicine a recognised institution during not less than fi months; (2) clinical practice of a recognised hospit for the same period. Conditions of study may b modified in the case of candidates of special experienc Notice of entry to the Secretary, Examination Ha Queen-square, London, W.C.1.

DIPLOMA IN BACTERIOLOGY.

The University of London has instituted a academic diploma in bacteriology, and a full tim course covering this diploma will be given October by the London School of Hygiene an Tropical Medicine. This course will be held a 6, Gordon-square, London, W.C. 1, pending th opening of the new buildings behind the Britis Museum which are now under construction. Th diploma is open to graduates in medicine, science, pharmacy of London or of any other approve university. Registered medical practitioners or oth non-graduate students who have obtained a quali cation and undergone a previous training which in th opinion of the University has fitted them to profit b the instruction may be admitted. The course study, which extends over an academic year,

ided into two parts, of which the first is concerned h bacteriological principles and with general hnique. The second part of the course is to be oted to bacteriology applied to (1) clinical medicine, hygiene, or (3) industry, at the selection of the ndidate.

Public Health: Epidemiology and Vital Statistics.—course in Epidemiology and Vital Statistics is vided by the London School of Hygiene and pical Medicine, under Prof. Greenwood, at the tional Institute for Medical Research, Hampstead. ference is given to medical graduates, and students not normally be admitted for a course of less than ee months.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

The Universities of Cambridge, London, Durham, eds, Manchester, Edinburgh, Dublin, National iversity of Ireland, and the Conjoint Board of R.C.P. Lond. and R.C.S.Eng. now grant diplomas psychological medicine under conditions that are rly comparable in the standard of the tests and in duration of the courses; the details on these nts can be obtained from the various examination dies.

In London, courses of instruction for the Diploma Psychological Medicine are given annually at the udsley Hospital, Denmark Hill, which has recently n definitely recognised as a school of the University London. The course consists of two parts, mmencing in January, and is adapted for the loma of the Conjoint Board, the University of ndon, or the University of Cambridge. The parts y be taken separately; also during the year there other short courses, lectures and demonstrations psychological medicine.

Maudsley Hospital.—Appointments as clinical assistts are obtainable at the Maudsley Hospital. The lding of such appointments for varying periods isfies the requirements of the different examining dies in respect of practical study of mental disorders. e appointments and other facilities for clinical perience are open to qualified medical practitioners art from the courses of instruction. Inquiries as lectures should be addressed to the Director of the ntral Pathological Laboratory, Maudsley Hospital, nmark Hill, S.E.; and as to clinical facilities, to Medical Superintendent at the same address.

Bethlem Royal Hospital.—A course of lectures and ctical instruction for the Diploma in Psychoical Medicine, granted by the various universities d the Conjoint Board, is held at Bethlem Royal spital, London, S.E., twice annually, during spring and autumn. The fee for the full course 15 guineas. Part A or Part B, however, may be en separately at a fee of 10 guineas per part. addition to the above, clinical instruction in ychological Medicine is given at Bethlem Royal spital every morning (except Wednesdays) at 11 A.M. e fee for students is 3 guineas for a period of ee months' attendance and for post-graduates a of 5 guineas for a like period. A reduction is de to those who attend the Diploma Course. use physicians are appointed at Bethlem Royal spital for a term of six months, which may be ended. These appointments are made on May 1st d Nov. 1st in each year and the vacancies are vertised in the medical papers. Apartments, comte board, attendance, and laundry are provided and o a salary at the rate of £100 per annum. Clinical istants are often appointed from time to time for riods of three months or longer. These are nonaried and non-resident posts, but partial board provided. The Physician-Superintendent, Bethlem yal Hospital, will supply further particulars.

University of Edinburgh.—Candidates for the ploma in Psychiatry must be graduates in medicine d surgery of the University of Edinburgh or hold corresponding registrable degrees or qualifications of some other licensing body. Candidates are required subsequent to the date of graduation or obtaining a registrable qualification to have held (*a*) a resident appointment for one year in a hospital for mental disorders approved by the Faculty of Medicine, or alternatively (*b*) a six months' appointment as defined in (*a*) and six months' practical study of nervous diseases in a special or general hospital approved by the Faculty of Medicine. There are two examinations for the Diploma. Part I. comprises 1. Anatomy of the Nervous System. 2. Physiology of the Nervous System. 3. Psychology and Experimental Psychology. Part II. comprises: 1. Neuropathology. 2. Clinical Psychiatry. 3. Clinical Neurology. 4. An additional subject selected by the candidate from a prescribed list. The examinations are held twice yearly in March and July. Candidates who have held an asylum appointment for a period of five years or more may be exempted from the course of study in one or more subjects of the curriculum. Full particulars can be obtained from the Dean of the Faculty of Medicine.

Dublin University.—A post-graduate diploma in Psychological Medicine is conferred upon registered medical practitioners who have held a resident medical appointment at a recognised institution for the treatment of Mental Diseases for 12 months, or who have held such an appointment for six months and have attended clinical instruction at an approved institution for six months. Candidates must also attend special courses of instruction and pass a special examination. Details can be obtained from the Registrar of the School of Physic, Trinity College, Dublin.

The National University of Ireland and the *Conjoint Board of the Royal Colleges of Ireland** confer a diploma in Psychological Medicine upon similar terms; application should be made to the Registrar of the School of Physic and the Secretary of the Board respectively.

DIPLOMA IN OPHTHALMIC MEDICINE.

Special diplomas in ophthalmic medicine and surgery are issued by two examining bodies.

University of Oxford.—The diploma in ophthalmology (D.O.) is granted to registered medical practitioners after passing an examination, held annually in March, which is open to candidates who have pursued at Oxford a course of study in ophthalmology over a period of at least two months and who have attended a 12 months' recognised hospital course. Further information regarding these requirements may be obtained from the Dean of the School of Medicine.

Conjoint Board R.C.P. Lond., R.C.S. Eng.—The Conjoint Board grants the D.O.M.S. after an examination held in two parts, twice yearly in February and July. Part I. comprises anatomy and embryology of the visual apparatus, physiology of vision, and elementary optics. Part II. comprises optical defects, ophthalmic medicine and surgery, and pathology with special reference to ophthalmology. The examination in each case is written, oral, and practical or clinical. Candidates may only enter for Part II. on completion of a year of special study of ophthalmology after obtaining a registrable diploma or a Degree in Medicine and Surgery of a University recognised by the Board.

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

University of Cambridge.—The D.M.R.E. is open only to those who have held for at least one year a medical qualification approved by the Committee. The new regulations, which come into operation this year, in some respects materially alter the scope of

* No returns.

the Diploma. The course now occupies nine months, beginning in October. The first three months, which can be spent either in Cambridge or in London, are occupied with lectures and practical work in Physics in preparation for the examination for Part I. in January, and an introductory course in Radiology and Electrology. The second three months must be spent in London. The course includes lectures and clinical instruction in Radiology and Electrology, with clinical practice in the radiological department of a hospital approved for that purpose by the Committee. The examination for Part II. is held in April. During the final three months a candidate must hold a clinical clerkship or similar appointment in a radiological department approved by the Committee, and must then present a thesis in the form of a critical report with notes upon six cases either in Radiology or in Electrology or in both these subjects, illustrating various methods of diagnosis or treatment. A number of large provincial hospitals have been approved by the Committee to take clinical assistants for this part of the course.

Further particulars as to courses and examinations may be obtained from G. Stead, M.A., Cavendish Laboratory, Cambridge, or from Dr. Stanley Melville, British Institute of Radiology, 32, Welbeck-street, London, W. 1.

University of Liverpool.—Candidates before admission to the examination for this diploma must possess a registrable qualification, approved by the University in medicine and surgery, and must have attended courses of instruction in (*a*) physics (two terms), (*b*) (i) radiology, and (ii) electrology during six months in the X ray and electrotherapeutic departments of a hospital or hospitals. An examination is held in March each year, the subjects being (*a*) physics, (*b*) radiology and electrology. Examination in either part may be taken separately. Fees: tuition, £24 5*s*.; examination and diploma, £6 5*s*. These courses commence during the first week in October. Application should be made to the Dean, Faculty of Medicine, the University of Liverpool.

University of Edinburgh.—Candidates for the Diploma in Radiology (D.R. Univ. Edin.) must be graduates in medicine and surgery of the University of Edinburgh or hold corresponding registrable degrees or qualification from some other licensing body. Candidates are not admitted to the examination for the Diploma until after the lapse of not less than one year from obtaining a registrable qualification, which qualification must be registered before admission to the Examination. The course of study begins in October and extends over a period of not less than three terms. The Examination, which is written, oral, and practical, is in two parts: (*a*) Physics, and (*b*) Radiology. The Examination is held twice yearly —viz., July and October. Full particulars may be obtained from the Dean of the Faculty of Medicine.

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.

The Conjoint Board R.C.P. Lond., R.C.S. Eng., grants the D.L.O. after an examination held in two parts, twice yearly, in June and December. Part I. comprises anatomy, embryology, and physiology of the ear, nose, pharynx, larynx, trachea and bronchi, and œsophagus. Part II. comprises the medicine, surgery, and pathology of the ear, nose, pharynx, larynx, trachea and bronchi, and œsophagus, and the recognition and use of special instruments and appliances. The examination in each case is written, oral, and practical or clinical. Candidates may only enter for Part II. on completion of one year of special study of the diseases of the ear, nose, pharynx, and larynx, after obtaining a registrable qualification, or a degree in medicine and surgery of a University recognised by the Board. The fee for admission to each part is 6 guineas.

DIPLOMA IN TUBERCULOUS DISEASES.

A Diploma in Tuberculous Diseases is given by t University of Wales. Candidates must possess medical qualification registrable for practice in Gre Britain and Ireland, and be not less than 25 years age, and either (Category A) have held, for a peri of not less than five years, whole-time appointmen for work in tuberculosis; or (Category B) have he a registrable qualification to practise for at least o year, and presented (*a*) a certificate of satisfacto pursuance of a course of consecutive post-gradua study of the clinical and epidemiological aspects tuberculosis of six months' duration at a recognis university, medical school, or hospital where su a course is given; or, alternatively, a certificate one year's post-graduate work as a whole-time memb of the staff of a tuberculosis hospital, sanatorium, dispensary approved by the Ministry of Health, sign by the representative of the authorities for whom t work was performed or by the administrative medic officer concerned; (*b*) a certificate of satisfacto pursuance of a course of consecutive post-gradua practical study of the Pathology and Bacteriology Tuberculosis of three months' duration at a tuberc losis laboratory or a recognised general laborato where such a course is given; (*c*) a certificate of thr months' satisfactory attendance at a tuberculo institute or dispensary.

The examination is divided into two parts and t fee is £10 10*s*. Applications should be made to t Registrar of the University, University Regist Cathays Park, Cardiff, not later than May 15 The above regulations apply up to and includi the next examination, to be held in June, 19 New regulations, particulars of which may be obtain on application to the Registrar, will come into fo for 1930.

The Cecil Prosser Research Scholarship, of the val of £250 for one year, is awarded triennially for resea in Tuberculosis.

DIPLOMA IN PUBLIC HEALTH.

THE following epitomises the instruction given various universities and centres of medical educati to medical men desiring to obtain diplomas in sanita science, public health, hygiene or State medici as this discipline is variously called. Resolutio designed with a view of ensuring "the possession o distinctively high proficiency, scientific and practic in all the branches of study which concern the pub health," have been adopted at various times by t General Medical Council. The diploma is registra by the Council, whose rules on the curriculum beco binding on the educational bodies concerned. T new regulations, which came into force in 19 extend the period of study and postpone the granti of a diploma until at least two years from qualificati

Conjoint Board of the R.C.P. Lond. and R.C.S. E New regulations came into force on Jan. 1 1924, which apply to all candidates who have n commenced bona-fide study of Public Health accordance with the above regulations before th date. They are as follows: The Examinat consists of two Parts. Part I. will be held in months of January, April, and June, and Part II. the months of January, April, and July in each ye Candidates may enter for Parts I. and II. separat or at the same time, but they must pass Part I. bef proceeding to Part II. The Examination in ea part will be written, oral, and practical. Part will include a practical examination in Infecti Diseases, Food Inspection, and Inspection of selec Premises. Candidates who fail to satisfy the Examin in either part may present themselves again at t next Examination on payment of the same fe Candidates intending to present themselves for eit part of the Examination must give 14 days' notice writing to the Secretary, at the Examination H Queen-square, London, W.C. 1.

Candidates will be admissible to Examination in rt I. on producing evidence :—

1. Of being in possession of a registrable qualification in dicine, Surgery, and Midwifery.

2. Of having attended during a period of not less than e months at an Institution recognised by the Examining ard in England, practical instruction in (*a*) Bacteriology d Parasitology (including Medical Entomology) especially their relation to diseases of man and to those diseases of e lower animals which are transmissible to man, during 0 hours, of which not less than 150 hours have been cupied in practical laboratory work. (*b*) Chemistry and ysics in relation to public health, during 90 hours, of ich not less than 70 hours have been occupied in practical oratory work. (*c*) Meteorology and Climatology in ation to public health, during not less than 10 hours.

Candidates will be admitted to Part II. of the xamination on producing evidence :—

1. Of having been in possession of a registrable qualifica- n in Medicine, Surgery, and Midwifery during not less an two years, of being registered by the General Medical uncil, and of having completed the curriculum for the ploma extending over a period of 12 calendar months bsequent to the attainment of a registrable qualification.

2. Of having attended, after obtaining the registrable alification, instruction during not less than 80 hours at Institution recognised by the Examining Board in gland in the following subjects :—(*a*) The Principles of blic Health and Sanitation for not less than 30 hours ;) Epidemiology and Vital Statistics for not less than hours ; (*c*) Sanitary Law and Administration (including blic Medical Services) during not less than 20 hours ;) Sanitary Construction and Planning during not less than hours.

3. Of having attended for three months the clinical prac- e of a hospital for infectious diseases recognised by the xamining Board in England and of having therein received struction in the methods of administration. The certificate ust state that the candidate has attended on one or more ys in each week of the three months, that each attendance as of two hours' duration, with a total attendance of hours.

4. Of having been engaged during a period of not less an six months in acquiring a practical knowledge of the ties, routine and special, of public health administration der the supervision of a Medical Officer of Health, and having received, from such officer or other competent edical Officer during not less than three hours on each of) working days, practical instruction in those duties and so those relating to : (*a*) Maternity and Child Welfare rvice ; (*b*) Health Service for children of school age,) Venereal Diseases Service ; (*d*) Tuberculosis Service ;) Industrial Hygiene ; (*f*) Inspection and Control of Food ; cluding meat and milk.

The above certificate (4) must be obtained from a edical Officer of Health who devotes his whole time public work, or from a Medical Officer of Health a Sanitary Area having a population of not less an 50,000, or in Ireland the Medical Superintendent fficer of Health of a County or County Borough aving a population of not less than 50,000.

Unirersity of Oxford.—An examination, conducted rtly in writing, partly vivâ voce, and in each subject rtly practical, is held in Michaelmas and in Trinity erm in the following subjects :—General Hygiene, eneral Pathology (with special relation to Infectious iseases), the Laws relating to Public Health, Sanitary ngineering, Vital Statistics. The examination is in vo parts, which may be taken together or separately ; rt Part I. must be passed either before or at the same xamination as Part II.

The First Part of the examination will comprise) written papers of three hours each in (i.) Chemistry nd Physics, and (ii.) Pathology and Bacteriology ;) a three hours' practical and vivâ voce examination in hemistry and Physics ; (*c*) a three hours' practical and vivâ voce examination in Pathology and Bacteriology.

The Second Part of the Examination will consist the following parts :—(*a*) Two written papers, ch of three hours, dealing with General Hygiene ncluding Sanitary Engineering, Vital Statistics, and he Laws relating to Public Health) ; (*b*) a practical nd vivâ voce examination in General Hygiene ; and) a three hours' practical and vivâ voce examination Pathology and Bacteriology.

Candidates in Part I. of the examination will be required to produce certificates (1) of Laboratory Work in Chemistry, Physics, Meteorology, and Climatology as applied to Hygiene, and (2) of having had Practical Instruction in Bacteriology and Parasitology and the Pathology of the Diseases of Animals transmissible to Man.

Candidates in Part II. will produce the following further certificates : (3) of a Practical Knowledge of the Duties, Routine and Special, of Public Health Administration ; and (4) of having attended the practice of a Hospital for Infectious Diseases at which opportunities are afforded for the study of the Methods of Administration.

All the above degrees are now open to Women Students, and particulars of Scholarships and Prizes may be obtained from the Principals of the various Ladies' Colleges. The names of candidates for the Diploma in Public Health must be sent to the Assistant Registrar of the University, Clarendon Building, Oxford. Applications for any further information should be addressed to the Dean, Department of Medicine, Museum, Oxford.

University of Cambridge.—Two examinations in so much of State medicine as is comprised in the functions of medical officers of health are held during the year. The examination is divided into two parts and demands proficiency in all the branches of study which bear upon the duties of medical officers of health. The examinations in both parts will be oral and practical, as well as in writing. Candidates may present themselves for either part separately or for both together at their option ; but the result of the examination in the case of any candidate will not be published until he has satisfied the examiners in both parts. Marks of distinction will be placed against the names of candidates who have specially distinguished themselves in either (1) Part I. of the examination ; or (2) Part II. of the examination. Candidates must before admission to either part of the examination produce evidence of having satisfied the regulations applicable to Part I. and Part II. The examination for Part I. is in April and for Part II. in October.

For Part I. of the examination courses of lectures and laboratory instruction are given in the University on Hygiene, Chemistry, &c., and on Bacteriology and Parasitology. For Part II. the Medical Officer of Health for Cambridge gives courses on Practical Sanitary Administration and in the Administrative Methods of the Infectious Diseases Hospital ; and the Medical Officer of Health to the Cambridgeshire County Council, on Sanitary Laws, School Hygiene, Epidemiology. There are also courses by special lecturers in Vital Statistics, Tuberculosis Service, Venereal Diseases Service, Industrial Hygiene, Maternity and Child Welfare. These courses are open to non-members of the University.

A special Diploma in Hygiene is granted to medical graduates whose qualifications are not registrable in England. The courses and examinations are the same as for the Diploma in Public Health (except that the candidates are not examined in English Sanitary Laws).

All applications for further information respecting examinations and the courses of study should be addressed to Mr. Purvis, Public Health Chemical Laboratory, Cambridge.

University of London.—Candidates for the M.D. Degree may offer State Medicine as a subject in which to graduate. The regulations have been revised and may be obtained on application to the Academic Registrar, University of London, South Kensington.

University of Durham.—The Degree of Bachelor of Hygiene (B.Hy.) and the Diploma in Public Health (D.P.H.).—No candidate is admitted to the final examination for the Degree of B.Hy. unless he is a Bachelor of Medicine and Surgery, of not less than two years' standing, of a recognised University whose degrees are registrable on the books of the General Medical Council of the United Kingdom, and no candidate is admitted to the final examination

for the D.P.H. unless he is a registered medical practitioner, of not less than two years' standing. The course of study for the B.Hy. and D.P.H. extends over a period of not less than 12 calendar months, subsequent to the attainment of a qualification registrable by the General Medical Council of the United Kingdom. Candidates for the B.Hy. must attend this course at the University of Durham; candidates for the D.P.H. may attend it at the University of Durham, or at any medical school or institution which is recognised by the University. The examination for the diploma or degree is divided into two parts. A candidate must pass in all the subjects of Part I. before being admitted to examination for Part II. In Part I., and also in Part II., a candidate must pass in all the specified subjects at one time. The examination for Part I. is practical, written, and oral, and includes the following subjects: Bacteriology and Parasitology (including medical entomology); Chemistry and Physics, and Meteorology and Climatology, in relation to Public Health. Candidates are not admitted to examination for Part I. until after they have completed the prescribed courses of instruction in the subjects thereof. The examination for Part II. includes Hygiene and Sanitation (comprising sanitary construction), Epidemiology and Infectious Diseases; Sanitary Law and Vital Statistics; Public Health Administration. The examination is written and oral, and includes practical examinations in Infectious Diseases, Food Inspection, Inspection of Premises—Dwellings, Factories, Workshops, Schools, &c. Candidates are not admitted to examination for Part II. until after they have completed the prescribed courses of instruction in the subjects thereof. Doctor of Hygiene (D.Hy.): Candidates must be Bachelors of Hygiene of the University of two years' standing, and are required to satisfy the examiners that they have conducted original research in the subject of Public Health.

Victoria University of Manchester.—An examination in Public Health is held twice yearly. The examination is in two parts and is written, oral, and practical. Candidates may present themselves for Parts I. and II. separately or at the same time provided that no candidate be admitted to Part II. unless he has already passed in Part I. No candidate's name will be published until he has satisfied the examiners in both parts of the examination. Every candidate who has passed both parts of the examination to the satisfaction of the examiners, and who is legally registered, will receive a Diploma in Public Health. The examination will begin about the middle of July and the middle of October in each year. Holders of the Diploma in Public Health are eligible for examination for the Certificates in School Hygiene and Factory Hygiene after attending the prescribed periods of study and hospital practice. An examination for a Diploma in Bacteriology is held for graduates in science or medicine who have attended prescribed courses for at least one academic year; candidates must present a satisfactory thesis on an approved subject.

University of Birmingham.—Under the revised rules and regulations of the General Medical Council the University grants a degree of B.Sc. in Public Health and also a Diploma in the same subject on the following conditions: Graduates in Medicine of this University may become candidates for the degree of Bachelor of Science in Public Health by conforming to all the requirements laid down for candidates for the Diploma in Public Health, except that after graduating in Medicine all courses of study must be taken out in the University, and they must, in addition, have attended a three months' course of Geology in the University. A Thesis on the Ætiology and Prevention of a Disease of which the candidate has made a special study must be submitted on entry for B.Sc. Part II. The examinations will be held in the months of March and October, and will consist of two parts, each part being written, oral, and practical. No candidate will be allowed to pass Part II. until he has passed Part I. Candidate may enter for Parts I. and II. separately or at th same time. The fee for each part of the examinatio is £6 5*s*. Medical Officers of the Royal Navy who hav attended the required course of study at the Nava Medical School, Greenwich, will be admitted to Part examinations for the Diploma in Public Healt whether they have previously been students at th Birmingham School or not; and the same applies t officers of the Royal Army Medical Corps who hav studied at the Staff College. Medical Officers of th Navy and Army are admitted to Part II. Examinatio (D.P.H.) on complying with the requirements lai down for attendance upon Courses of Study. Thes Courses need not necessarily be attended in th University of Birmingham.

University of Liverpool.—The University grants Degree in Hygiene (M.H.) and a Diploma (D.P.H. and every facility is afforded for training in Sanitar Science and State Medicine. The curriculum for th Degree extends over a period of two years, the firs of which is devoted to laboratory instruction an practical classes (including those for the Diploma) the second being devoted to advanced study an research. The courses may be taken at any tim and students are allowed to work daily in th laboratories.

University of Leeds.—The University grants Diploma in Public Health, and every facility i afforded for training in Sanitary Science and Stat Medicine. The examination, which is held twice i each year—namely, in June and December—is i two parts, and is written, oral, and practical. Can didates must pass in Part I. before being admitted t Part II. Instruction in Entomology and Meteorolog is given in the first term, and in Sanitary Chemistr and Bacteriology in the second and third term Practical work under arrangement with the Leed City Council. Prospectus can be obtained from th Academic Sub-Dean of the Medical School.

University of Bristol.—Diploma in Public Healt Candidates must be at least 23 years of age, shall b fully registered medical practitioners of not less tha two years' standing as such, and shall have passe the examination prescribed by regulations, which ca be obtained from the Registrar upon application.

University of Wales.—Candidates for the Diplom in Public Health, the curriculum for which extend over a period of not less than twelve calendar month subsequent to the attainment of a registrable qualif cation, must produce evidence of having attende for not less than five months at the Welsh Nationa School of Medicine or at an institution approved b the Court, practical instruction in Bacteriology an Parasitology, Chemistry and Physics, and Meteorolog and Climatology in relation to Public Health. Cand dates must also satisfy the examiners that they hav received instruction approved by the University i the Principles of Public Health and Sanitatio Epidemiology and Vital Statistics, Sanitary La and Administration, and Sanitary Construction an Planning. The candidate must also produce evidenc that he has attended for three months on the clinica practice of a hospital for infectious diseases con taining not less than 100 beds, and has received therei instruction in the methods of administration, and tha he has for a period of not less than six months bee engaged in acquiring a practical knowledge of th duties, routine and special, of a public healt administration under the supervision of a medica officer of health. The examination for the diplom is divided into two parts, Part I. and Part II., each o which extends over not less than two days. A candi date must pass in all the subjects of Part I. befor being admitted to Part II. of the examination. I Part I., and also in Part II., a candidate must pas in all the specified subjects at one time. Part I. of th examination is practical, written and oral, and compris Bacteriology and Parasitology (including Medica Entomology); Chemistry and Physics, and Meteor

y and Climatology in relation to Public Health. ndidates may not be admitted to Part I. of the amination until they have been certified as having rsued the prescribed courses of instruction in the bjects thereof. Part II. of the examination, which is itten and oral, comprises: Hygiene and Sanitation cluding Sanitary Construction); Epidemiology and fectious Diseases; Sanitary Law and Vital Statis-s; Public Health Administration. No candidate n be admitted to Part II. of the examination until er the lapse of not less than two years from the date his obtaining a registrable qualification in Medicine, rgery, and Midwifery, which qualification must be istered before admission to Part II. of the examina-n. An examination in each part will be held nually. The examination in Part I. will be held in ne, that in Part II. in October. Full information m the Registrar of the University, University gistry, Cathays Park, Cardiff, not later than y 15th for the examination in Part I. and not er than Sept. 1st for the examination in Part II.

Iniversity of Edinburgh.—Candidates for the ploma in Public Health must be graduates in medi-e and surgery of the University, or hold corre-nding degrees or registrable medical qualifications ich must be registered before admission to mination. The course is divided into two parts which examinations are held twice yearly, in rch and July for Part I., and in October and rch for Part II. In each part the candidate st pass in all the specified subjects at one examina-n. Candidates are not admitted to Part II. until y have passed Part I., nor until after the lapse of less than two years from the date of obtaining registrable medical qualification. The subjects the examination are: Part I. (written, oral, and ctical), Bacteriology; Medical Entomology and rasitology; Chemistry, Physics, Meteorology, and matology. Part II. (written, oral, and practical), giene, Sanitation, and Sanitary Construction; idemiology and Infectious Diseases; Sanitary Law l Vital Statistics; Public Health Administration. ere is also included practical examinations in fectious Diseases, Food Inspection, and Inspection Premises. The course, which extends over a iod of 12 calendar months, begins in October, and vision is made by the University for instruction in the subjects. Detailed particulars may be obtained m the Dean of the Faculty of Medicine.

Iniversity of Aberdeen.—Every candidate for the ploma in Public Health must be a graduate in dicine of the University of Aberdeen, or of y other University whose medical degrees are ognised as qualifying for registration by the neral Medical Council of the United Kingdom. candidate will be admitted to the Final Part the Examination for the Diploma until after lapse of not less than two years from the date of obtaining a registrable qualification in Medicine, ich qualification shall have been registered before h admission. The whole of the prescribed cur-lum of study must be undertaken after the didate has obtained a registrable qualification in dicine, and shall extend over not less than twelve ndar months. At least one academic term must spent at the University of Aberdeen. Every didate shall produce evidence of having complied h the following requirements in respect of study l training:—1. Practical instruction in the follow-subjects within a laboratory or laboratories roved by the University: (*a*) Bacteriology and rasitology (including Medical Entomology), in tion to diseases of man and diseases of lower mals transmissible to man—at least 180 hours, of ich not less than 150 shall be occupied in practical oratory work; (*b*) Chemistry and Physics, in tion to Public Health—at least 90 hours, of which less than 70 shall be occupied in practical labora-y work; (*c*) Meteorology and Climatology, in tion to Public Health—at least 10 hours; such truction to extend over not less than five months or two academic terms. 2. A course or courses of instruction extending over not less than 80 hours dealing with: (*a*) The Principles of Public Health and Sanitation—30 hours; (*b*) Epidemiology and Vital Statistics—20 hours; (*c*) Sanitary Law and Administration (including Public Medical Services)—20 hours; (*d*) Sanitary Construction and Planning—10 hours; such course or courses to be given at an institution or by a teacher or teachers approved by the University. 3. Practical instruction, clinical and administrative, within a recognised hospital for general infectious diseases; such instruction to extend over three months, and to include 30 daily attendances of not less than two hours in each week. 4. Practical instruction and experience, during not less than six months (including attendance of at least three hours on each of sixty working days) in the duties, routine and special, of public health administration, under the supervision of a medical officer of health, who shall certify that the candidate has received from this officer or other competent medical officer, practical instruction in these duties, and also in those relating to: (*a*) Maternity and Child Welfare Service; (*b*) Health Service for Children of School Age; (*c*) Venereal Diseases Service; (*d*) Tuberculosis Service; (*e*) Industrial Hygiene; (*f*) Inspection and Control of Food, including meat and milk. The medical officers of health recognised for this purpose by the General Medical Council are: (*a*) a medical officer of health who devotes his whole time to public health work; or (*b*) the medical officer of health of a sanitary area having a population of not less than 50,000; or (*c*) in Ireland, the medical superintendent officer of health of a county or county borough having a population of not less than 50,000. The examination for the diploma is divided into two parts, each of which extends over not less than three days.

University of Glasgow.—Degree of B.Sc. in Public Health.—Candidates must be graduates in Medicine of a University of the United Kingdom, or of some other University recognised for the purpose by the University Court. Candidates must produce evidence (1) that, after they have obtained a registrable Degree in Medicine, a period of not less than two years has elapsed; (2) that, after they have obtained a registrable degree in Medicine, they have, during a period of not less than 21 calendar months, pursued the course of work and instruction prescribed, and have satisfied the examiners in the prescribed examinations. There are two examinations. Part I. includes the following subjects: (i) Bacteriology and Parasitology (including Medical Entomology); (ii) Chemistry and Physics in relation to Public Health; (iii) Meteorology and Climatology in relation to Public Health; (iv) Higher Chemistry in relation to Public Health; (v) Physics and Geology. A candidate must pass in the subjects marked (i), (ii), and (iii) of Part I. at one examination. Part II. includes the following subjects: (vi) Hygiene and Sanitation (including Sanitary construction); (vii) Epidemiology and Infectious Diseases; (viii) Sanitary Law and Vital Statistics; (ix) Public Health Administration; (x) Applied Hygiene. The examination for Part II. includes practical examinations in Infectious Diseases; Food Inspection; Inspection of Premises, such as dwellings, factories, workshops, schools, and the like. The examination in Applied Hygiene may be on a selected subject professed by the candidate. A candidate must pass in the subjects marked (vi), (vii), (viii), and (ix) of Part II. at one examination. *Diploma in Public Health (D.P.H.).*—Candidates for this Diploma must be legally qualified medical practitioners who are matriculated students of the University. A period of not less than two years must elapse between the attainment by the candidate of a registrable medical qualification, and his admission to the final examination (Part II.) for the Diploma. The candidate must, during a period of not less than 12 calendar months, subsequent to his attainment of a registrable medical

qualification, pursue the course of work and instruction prescribed, and pass the prescribed examinations. The examination, which is both written and oral, is divided into two parts, Part I. and Part II., each of which extends over not less than two days. No candidate is admitted to either part of the examination until he has completed the prescribed courses of instruction in the subjects of that part. No candidate is admitted to Part II. until he has passed in all the subjects of Part I., nor until after the lapse of not less than two years from the date of his obtaining a registrable medical qualification, nor unless he presents a certificate showing that his name and qualification have been duly registered in the Medical Register. Part I. includes: (i) Bacteriology and Parasitology (including Medical Entomology); (ii) Chemistry and Physics in relation to Public Health; (iii) Meteorology and Climatology in relation to Public Health. A candidate must pass in all the subjects at one examination. Part II. includes: (iv) Hygiene and Sanitation (including Sanitary Construction); (v) Epidemiology and Infectious Diseases; (vi) Sanitary Law and Vital Statistics; (vii) Public Health Administration. A candidate must pass in all the subjects at one examination. The examination for Part II. includes practical examinations in Infectious Diseases; Food Inspection; Inspection of Premises, such as dwellings, factories, workshops, schools, and the like.

University of St. Andrews. — The Diploma in Public Health is open to those who hold a registered medical qualification of the United Kingdom. The examination is in two parts. (1) (*a*) Bacteriology and Parasitology; (*b*) Chemistry and Physics; (*c*) Meteorology and Climatology. (2) Public Health and Sanitation, Epidemiology and Vital Statistics, Sanitary Law and Administration, and Sanitary Construction and Planning. Before admission to the first examination the candidate must have held his medical qualification for one year, and before admission to the second examination for two years. Graduates in Medicine of the University of St. Andrews may take part or all of the qualifying classes in any University of the United Kingdom, or in any Indian, Colonial, or Foreign University or medical school recognised by the University Court, but holders of other registered medical qualifications must spend at least eight out of the 12 months' curriculum in St. Andrews University. A complete course is given in the Conjoint Medical School, Dundee. The examination fee for each division is £5 5*s*.

University of Dublin (*Trinity College*).—The Diploma in Public Health is conferred, after examination, under the following conditions. The candidate must be a registered medical practitioner and have obtained a registrable qualification at least two years before the second part of the examination. The candidate must have completed, subsequently to obtaining a registrable qualification, five months' practical instruction in a chemical and bacteriological laboratory, or laboratories, approved by the University, must have received instruction in the following subjects: the principles of public health and sanitation, epidemiology and vital statistics, sanitary law and administration (including public medical services), sanitary construction and planning; must have studied, practically, outdoor sanitary work for six months under an approved officer of health, and must have attended for three months at a fever hospital where opportunities are afforded for the study of methods of administration. A special prospectus may be obtained by application to the Registrar of the School of Physic, Trinity College, Dublin.

*National University of Ireland.**—At this University there is a Diploma in Public Health, a B.Sc. in Public Health, and a D.Sc. in Public Health.

* No returns.

University of Belfast.—A Diploma in Public Healt is given by examination. Every candidate mu produce evidence that, after obtaining a registrab qualification, he has during six months receive practical instruction in an approved laboratory which Chemistry, Bacteriology, and the Patholo of the diseases of animals transmissible to man a taught. After obtaining a registrable qualificatio every candidate must produce evidence that he h attended during three months the practice of hospital for infectious diseases at which opportuniti are afforded for the study of methods of administr tion. The examination must have extended over n less than four days, one of which shall have be devoted to practical work in a laboratory, and o to practical examination in, and reporting on, subjec which fall within the special outdoor duties of medical officer of health. The first part of the examin tion will have reference to the general principles Sanitary Science and the second part to State Medici and to the applications of Pathology and Sanita Science. The examination in both parts is he twice a year, in March and June.

Royal College of Physicians of Edinburgh, Roy College of Surgeons of Edinburgh, Royal Faculty Physicians and Surgeons of Glasgow.—All candidat for the Diploma in Public Health must have qualification which has been registered under t Medical Acts. Candidates must have attended n less than four calendar months' practical instructi in Chemistry and Physics (90 hours), Bacteriolo and Parasitology (180 hours), and Meteorology a Climatology (60 hours) in a recognised laboratory laboratories, must have studied outdoor sanitary wo for six months under a medical officer of health other sanitary officer; and must give evidence attendance for three months at the practice of Hospital for Infectious Diseases, at which he h received instruction in the methods of administratic The examination consists of two parts, and candida may enter for both at one period or for either separate The First Part includes (*a*) Laboratory Work (Che istry and Bacteriology), (*b*) Physics and Meteorolog and the Second Examination embraces (*a*) Rep on Premises visited, (*b*) Examination at Fever Hospit (*c*) Examination at Public Abattoir, (*d*) Written a Oral Examinations on Epidemiology and Endemiolo (*e*) Vital Statistics and Sanitary Law, and (*f*) Practi Sanitation. The fee is 12 guineas for both examin tions, or 6 guineas for either of them. A fee 3 guineas is payable by rejected candidates for eitl examination. The examination is held twice year in May in Glasgow, and October in Edinburgh. T published regulations provide detailed synopses of t subjects of examination. *The curriculum and examin tion have been adjusted fully to meet the requirements the regulations of the General Medical Council wh came into force on Jan. 1st, 1924.* Candidates applyi for Regulations should state date of commencem of curriculum. The Registrar for Edinburgh is D. L. Eadie, 49, Lauriston-place, and for Glasg Mr. Walter Hurst, 242, St. Vincent-street.

Royal College of Physicians of Ireland and Ro College of Surgeons in Ireland.—Every candid for the Diploma in Public Health must obse the following rules: 1. A period of not less th two years shall elapse between the attainm by a candidate of a registrable qualification Medicine, Surgery, and Midwifery, and his mission to the Final Examination for a Diplo in Public Health. 2. The curriculum for a Diplo in Public Health shall extend over a period not less than 12 calendar months subsequent the attainment of a registrable qualificati 3. Every candidate shall produce evidence having attended, during a period of not less th five months, at an institution approved by Licensing Body granting the Diploma, practi instruction in—(*a*) Bacteriology and Parasitol (including Medical Entomology), especially in th relation to diseases of man, and to those diseases

lower animals which are transmissible to man; Chemistry and Physics in relation to Public lth; (*c*) Meteorology and Climatology in relation ublic Health. At least 180 hours must be devoted ourse (*a*), of which not less than 150 hours shall occupied in practical Laboratory work. At least ours must be devoted to Course (*b*), of which not than 70 hours shall be occupied in practical oratory work. At least 10 hours must be devoted ourse (*c*). 4. Evidence of having received, during less than 80 hours, at an institution or from hers approved by the Licensing Body granting Diploma, instruction in the following subjects: The Principles of Public Health and Sanitation; Epidemiology and Vital Statistics; (*c*) Sanitary and Administration (including Public Medical vices); (*d*) Sanitary Construction and Planning. vidence that he has attended for three months the clinical practice of a recognised Hospital for ctious Diseases. 6. Evidence that he has, during a od of not less than six months, been engaged in uiring a practical knowledge of the duties, routine special, of Public Health Administration under supervision of a Medical Officer of Health. examination for the Diploma is divided into two ts. The examination for Part I. includes Bacterio- and Parasitology (with Medical Entomology); mistry and Physics, and Meteorology and Clima- gy, in relation to Public Health. The examina- for Part II. includes Hygiene and Sanitation h Sanitary Construction); Epidemiology and ctious Diseases; Sanitary Law and Vital tistics; Public Health Administration. The exa- ation, which is written and oral, includes ctical examinations in Infectious Diseases; Food pection; Inspection of Premises—dwellings, fac- es, workshops, and schools.

DENTAL SURGERY.

EGISTRATION on the Medical Register entitles a ctitioner to practise as a dentist, although he not register as such without degree or licence in tistry; but few dental appointments at general or ial hospitals or dispensaries are available save to se with a special diploma, and until registered the Dentist Register, no dental work under the litional Benefit Scheme of the National Health rance Act can be undertaken.

he Examining Bodies in Dentistry which grant rees and diplomas in the subject are as follows: yal College of Surgeons of England, Royal College Surgeons, Edinburgh, Royal Faculty of Physicians Surgeons of Glasgow, Royal College of Surgeons reland, and the following Universities: Birming- n, Bristol, Durham, Leeds, Liverpool, London, nchester, Sheffield, St. Andrews, Dublin (Trinity lege), Queen's University of Belfast, and the ional University of Ireland. The respective uirements of the various examining bodies in tistry are very similar, being designed to meet requirements of the General Medical Council, the examinations vary in stringency, and each ool has its rules for matriculation and exemp- n, and its scale of fees. The student should apply he secretaries of the various Conjoint Boards or to Deans of the medical faculties or medical schools a syllabus.

EACHING INSTITUTIONS IN DENTISTRY: LONDON.

oyal Dental Hospital of London, School of Dental gery, Leicester-square.—A school of the University London. Women are admitted as students are eligible for all hospital appointments and ool prizes. The school provides the special dental cation required by the Royal College of Surgeons the Licence in Dental Surgery. The general part the curriculum may be taken at any general pital. The hospital is open from 9 A.M. to 5 P.M., re being one staff for the morning and another for the afternoon of each day. Pupils are received for the training in dental mechanics recognised by the curriculum. The instructors at the commencement of each session give a course of lectures on Operative Dental Surgery. The five house surgeoncies are held for six months each and are open to all qualified students. The lecturers, in addition to their lectures, give special demonstrations on the Microscopy of Dental Anatomy and Dental Surgery. The lecturer on Dental Mechanics also gives practical demonstrations in the laboratory. There is an Entrance Scholarship in Chemistry and Physics of the value of £25. One Entrance Scholarship in Dental Mechanics and Metallurgy, value £25, open to pupils of the Hospital only. Prizes and certificates are awarded by the lecturers for the best examinations in the subjects of their respective courses at the end of the summer and winter sessions. For full information as to scholarships and prizes, and other matters connected with the course, application should be made to the Dean.

University College Hospital Dental School, corner of Great Portland and Devonshire-streets, W.—This Hospital and School has recently been thoroughly reorganised, and is now fully equipped with all the most modern appliances. Students are entered as students of University College Hospital, and, as such, attend the classes of Anatomy and Physiology in University College, which is a few minutes' walk from the Dental Department in Great Portland-street, hitherto known as the *National Dental Hospital*, the first Dental School to admit Women Students. Practical courses to comply with the R.C.S. curriculum are held. Clinical Lectures and Demonstrations are given, and each student on entering passes through a preliminary course under a demonstrator. A prospectus containing full information as to lectures, fees, and prizes may be had on application to the Sub-Dean for Dental Students, who attends at University College Hospital Medical School, University street, W.C.1, on Wednesday mornings from 9.30 to 10.30, and at other times by appointment.

Guy's Hospital Dental School.—The work of the Dental Department begins daily at 9 A.M. both in the extraction rooms and in the conservation room. The Extraction Rooms: There is ample accommodation for both general and local anæsthetic extractions, together with waiting- and retiring-rooms. Patients are admitted between 8.45 and 9.30 A.M., and are seen by the dental surgeon for the day, the staff demonstrators, the dental house surgeons, and the dressers. The Conservation Room is open from 9 A.M. till 5 P.M. It affords accommodation for about 100 dental chairs, with the necessary equipment of the most modern type for the use of the Dressers, who, under the supervision of the Staff, perform the various operations of Dental Surgery. There is a separate room for denture patients affording accommodation for 15 chairs and a separate department for children with accommodation for 20 chairs. The Members of the staff attend every morning and afternoon to give demonstrations and otherwise assist students in their work in the Conservation Room and Prosthetic Laboratory. The Probationers' Laboratory is supervised by three of the staff demonstrators, and instruction is given in operative dentistry on a "mannikin" to students during their first three months of clinical study. Students in Dental Prosthetics are received, and a graded, systematic, and full course of instruction, extending over two years, is carried out under the supervision of the Director of the Prosthetic Laboratory, assisted by two demonstrators, a house surgeon, and five mechanics.

Dental students have the opportunity of attending at this hospital the whole course of instruction required by the examining board for the B.D.S. Lond. or L.D.S. Eng.—viz., the complete course in dental prosthetics, the special lectures and practice of the Dental Department, and the general lectures and practice of the Medical School. The fees for these

two courses may be paid separately or together, or they may be combined with the fees required to be paid for the course for a medical diploma. Students who enter for a medical as well as a dental diploma are allowed to pursue their study of Dentistry during any period of their medical course most convenient to themselves without further charge.

Twelve house surgeons, 20 assistant house surgeons, and four student demonstrators of Dental Histology are appointed annually. The following appointments are held by students: Full surgeon's dresser, assistant surgeon's dresser, dresser in the children's department, casualty dresser, clerk to the anæsthetist, dresser in the gas extraction and local anæsthetic extraction rooms, and probationary dresser. For particulars as to scholarships and prizes, as well as all information, application should be made to the Dean of the Medical School, Guy's Hospital, London Bridge, S.E. 1.

King's College Hospital.—The Dental School is part of the Medical School of King's College Hospital, and was opened in November, 1923. The Dental Out-patient Department of the Hospital is used for the performance of dental extractions. A large Conservation Room with provision for 40 dental chairs has been equipped. Smaller rooms are used for clinical teaching and administrative requirements, and a specially equipped laboratory for training in the art of dental mechanics. An X ray apparatus has been installed for special use in dental skiagraphy. A museum containing a large number of specimens illustrating oral, buccal, dental, and other diseases is available for teaching purposes. The library, lecture theatre, lecture rooms, common rooms, and the refreshment room are all available for the use of students. Courses of study, including practical work, are provided for the degree of Bachelor of Dental Surgery of the University of London, and for the Diploma in Dental Surgery of the Royal College of Surgeons of England. Special arrangements are made for those students who wish to take a medical degree or qualification in addition to a degree or diploma in Dental Surgery.

The following salaried appointments are open to qualified members of the School: Registrar, Resident House Surgeon, Non-Resident House Surgeon, and Tutor in Dental Mechanics.

Full particulars of the Dental School may be obtained on application to the Dean, or to the Secretary of the Medical School, King's College Hospital, Denmark Hill, London, S.E.

London Hospital.—This school is a part of the London Hospital and Medical College, and is fully equipped on the most modern lines and with the latest appliances. It provides a complete curriculum in all subjects for the B.D.S. Degree and for the L.D.S. Diploma, and is admirably adapted for the purpose of teaching. The Conservation Room is well lighted and ventilated and fitted with pump chairs of the latest pattern; the fountain spittoons at many of the chairs have been specially designed. Each spittoon has attached to it a saliva ejector, hot and cold water, compressed air, gas and electric current, also a swing bracket to carry the students' cabinet. Electric sterilisers are supplied in each department and motor engines where required. The School possesses, in addition to the Theatres, Laboratories, and Museums in the College, a special Museum of Dental Anatomy and Surgery, Operative Dentistry, Prosthetic and Extraction Rooms, and Laboratories for Practical Metallurgy and Prosthesis. A systematic course of instruction is arranged for pupils. The up-to-date Laboratory contains every modern apparatus and is in charge of a skilled curator and his assistants. Connected with the Medical College and Dental School are a Library, Athenæum, Clubs' Union, Dining Hall with moderate tariff, Students' Hostel, and an Athletic Ground. For full particulars as to Scholarships and Prizes, fees and course of study advised, apply to the Dean of the Medical School.

London (Royal Free Hospital) School of Medic for Women.—Full courses are arranged for wom students in conjunction with the Royal Den Hospital, Leicester-square, for the study of dentistr and in preparation for the B.D.S. Degree of t University of London and the Licence in Den Surgery of the Royal College of Surgeons of Engla at the London (Royal Free Hospital) School Medicine for Women.

TEACHING INSTITUTIONS OUTSIDE LONDON.

Birmingham Dental Hospital, Great Charles-street Dean: Cyril Howkins, C.B.E., D.S.O., M.R.C L.D.S. The Dental Hospital has accommodation 100 students. The equipment is in accordance w the most modern requirements for the efficient teach and practice of Dental Surgery, including Radiol and Ultra-Violet Ray Therapy and a new departm for Practical Pathology and Bacteriology. operations performed annually average 35,000, incl ing gold and other fillings, crowns, bridges, porcel inlays, and injections for block and infiltrat anæsthesia. The orthodontic department is one the foremost in the country. The Prosthetic a Mechanical Department is large and well lighted a under a highly skilled instructor who is alw present. Application for information as to fees a scholarships must be sent to the Dean of the Med Faculty, Birmingham University, or the Dean of Dental Hospital, Birmingham.

Leeds University School of Dentistry.—The Schoo Dentistry is adequately equipped to provide for complete training of the dental student. It fo a part of the Leeds School of Medicine whilst instruction in clinical and mechanical dentistry carried out in the Dental Hospital. The Schoo now in occupation of a spacious new build especially designed to the requirements of mod dental teaching. The School is also the de department of the General Infirmary, and its cl association with the work of that institution ens an adequate supply of clinical material, and ena a fuller insight into the position dental surg holds in relation to general medicine and surg especially with regard to the major diseases injuries of the head and neck. The courses of st are mainly designed to meet the requirements of B.Ch.D. and L.D.S. Leeds, but every opportunity afforded to students preparing for the degrees diplomas of other licensing bodies. Full-time dem strators give the instruction in clinical dental surg prosthetic dentistry, and mechanics, which is car out under the supervision and direction of membe the Honorary Staff, two of whom are in attenda each day. Special facilities are provided for instruct in Orthodontia, Dental Radiography, Local General Anæsthetics. Prizes are offered for comp tion to pupils and students in their respective y of study. Communications should be addressed the Warden, School of Dentistry, Leeds, from wh a prospectus may be obtained.

Dental Hospital of Manchester.—This hospital i association for teaching purposes with the Univer of Manchester and the Royal Infirmary, and is the centre of a very large population. Courses study are provided to meet the requirements of various examining bodies, including those of University of Manchester for the qualifications L.D and B.D.S., and the L.D.S. of the Royal Colleg Surgeons of England. Clinical instruction is gi in Dental Prosthetics, Operative Dentistry, Diagn and Extraction, Orthodontics, Dental Surgery, Ra graphy, and Anæsthetics by specially appoin Clinical Teachers.

All the courses of instruction are open to wo students. Copies of the Prospectus will be forwar on application to Mr. J. Hilditch Mathews, Dean

Newcastle-upon-Tyne Dental Hospital and Schoo This hospital is centrally situated (within five min of the various colleges, infirmary, and railway statio

rooms are well lighted and thoroughly equipped carrying on the work. Dental surgeons and an esthetist attend each morning. A tutorial dental geon and a prosthetic tutor are also in attendance. dals and Certificates of Merit are granted to dents showing certain standards of proficiency the various classes at the Dental School. The spectus of the Dental Hospital and School, con- ning full information, may be obtained from . James Coltman, 13, Ellison-place, Newcastle- on-Tyne, Dean.

Devon and Exeter Dental Hospital, 24, Southernhay st, Exeter.—The hospital is open on Mondays, esdays, Wednesdays, Thursdays, Fridays, and urdays, and patients are admitted between the rs of 9.30 and 11 A.M. Students attend the ctice of the hospital under the control of the dical officers.

Scottish Teaching Institutions.

The Incorporated Edinburgh Dental Hospital and ool.—The Edinburgh Dental Hospital and School located in spacious and well-equipped buildings 30, 31, and 32, Chambers-street, and offers special vantages to dental students. A large and important ension of the existing buildings has now been ned. The General Courses required for the ntal Diploma may be taken in the Medical ool of the Royal Colleges of Physicians and geons or in the University schools. The general pital attendance and clinical instruction are taken the Royal Infirmary. The University, Medical ools, and Royal Infirmary are within three minutes' lk of the Dental Hospital. The special courses are en in the hospital. The Dental Hospital practice, ending over two years, affords a student ample portunity for a full acquaintance with every branch dentistry. The hospital admits a limited number indentured pupils. They receive their instruction Mechanical Dentistry concurrently with the general l special courses. A premium of 60 guineas is yable with each such pupil. The practice and tures of the hospital are recognised by, and qualify , all the Licensing Boards. Those students who ire to take a Medical and Surgical Diploma in lition to the L.D.S. have in this school admirable ilities for so doing. The triple qualification of the yal College of Physicians and Surgeons of Edinburgh l the Royal Faculty of Physicians and Surgeons of sgow is recommended. The Higher Dental ploma (H.D.D.) of the Royal College of Surgeons ords an opportunity of obtaining a higher qualifica- n subsequent to registration. The Prospectus, with l information, may be obtained by application to Dean or the Assistant Secretary.

Incorporated Glasgow Dental Hospital, 158, Renfrew- eet and 15, Dalhousie-street, Glasgow.—The School pen to Men and Women Students, and Lectures given on Dental Surgery, Operative Dental rgery, Orthodontia, Dental Anatomy and Physio- y, Dental Histology, Dental Mechanics, Crown and dge work, Dental Metallurgy, Dental Bacteriology, diology, Anæsthetics, and Dental Materia Medica. ctures on general subjects required for Dentistry y be taken at the University or at one of the extra- ral schools where special provision is made for ntal Students. A new mechanical laboratory with ch accommodation for 60 pupils and fully equipped h the most modern appliances for teaching practical tal mechanics has recently been added. Full ormation may be had on application to the Dean.

Glasgow Royal Infirmary (Dental Department).—e following course in the curriculum can be taken St. Mungo's College: Anatomy, six months; actical Anatomy, nine months; Physiology, six nths; Chemistry, six months; Practical Chemistry, ee months; Surgery, six months; Medicine, six nths; Materia Medica, three months; Dental rgery, six months, and attendance for two years the dental department of the hospital. Clinical Medicine (three months) and Clinical Surgery (six months) are taken at the Royal Infirmary.

Ireland.

Incorporated Dental Hospital of Ireland, Lincoln-place, Dublin.—All Dental Students who have passed their Second Dental Examination in the Royal College of Surgeons in Ireland (or an equivalent examination or examinations) are admissible to the Clinical Instruction of the Hospital. In addition to Clinical Instruction and Special Demonstrations, courses of lectures are given at the hospital on Dental Surgery and Pathology, Mechanical Dentistry, the Administration of Anæsthetics, Orthodontia, Dental Anatomy, and Dental Materia Medica, and instruction in Anæsthetics. The course in practical Dental Mechanics can be taken in the Hospital Laboratory. Further particulars can be obtained from the Dean.

PRISON MEDICAL SERVICE.

Candidates for the Prison Medical Service are approved by the Secretary of State for the Home Department on the recommendation of the Prison Commissioners. Preference is always given to candidates who have experience of lunacy. Application for employment may be made on a special form, which can be obtained from the Secretary, Prison Commission, Home Office, London, S.W. In the smaller prisons the medical officership is part-time, and is usually filled by practitioners in the locality, preference being given to those who have special experience of lunacy. In the large prisons the medical staff must devote their whole time to the Service. In the case of whole-time service, the appointment is in the first instance to the post of Medical Officer, Class II., and from the seniors of this rank the Medical Officers, Class I., are selected as vacancies occur. The pay of the whole-time prison medical staff is as follows: Medical Officer, Class II., £350, rising by annual increments of £20 to £600, making the pay at present with bonus £485 8*s.* to £776 7*s.*; Medical Officer, Class I., £650, rising by annual increments of £25 to £800, plus bonus, making the pay £837 5*s.* to £995 11*s.* Unfurnished quarters are provided or an allowance in lieu is made. Study-leave is granted annually to two of the whole-time Medical Officers. There are 12 full-time medical officers of Class I. and 15 Class II., and 23 part-time medical officers. The number of vacancies is never large and promotion is slow.

The Elizabeth Garrett Anderson Hospital.—Application for a Charter of Incorporation has been made by the Marchioness of Dufferin and Ava and others on behalf of the Elizabeth Garrett Anderson Hospital.

International Medical Post-graduate Courses in Berlin.—In connexion with the Medical Faculty of Berlin post-graduate courses are held by the Lecturers' Association for Medical Continuation Courses and the Kaiserin Friedrich-Haus. The regular courses last from two to four weeks; other courses for those wishing to act as resident assistants in clinics, hospitals, and laboratories, lasting two to three months and longer, are arranged under systematic supervision. Courses will also be held next month as follows: Oct. 1st to 13th, General Survey of Medical Progress with Special Reference to Pulmonary Diseases; Oct. 8th to 20th, Nose, Throat, and Ear Course for Specialists; Oct. 15th to 27th, Pediatry. There will also be a course on New Methods of Diagnosis and Therapy, with practical clinical studies and exercises in the City Hospital, Friedrichshain, and its laboratories, as well as single courses in special fields of medical science, including practical work. The courses are held in German, but some of the professors speak English, French, and Spanish, Further information and details as to lodgings and so forth can be obtained from the Kaiserin Friedrich-Haus, Luisenplatz 2–4, Berlin, N.W. 6.

PUBLIC AUTHORITIES AND RESEARCH.*

By JAMES M. BEATTIE, M.D. Edin.,
PROFESSOR OF BACTERIOLOGY IN THE UNIVERSITY OF LIVERPOOL.

At present there are a few public authorities which encourage research to a limited extent, but the great bulk of them do practically nothing, and research is largely financed by private individuals, or by universities and colleges which can ill afford the money. I do not forget the national effort in our Medical Research Council and what is done under the direction of the Ministry of Health and the Ministry of Agriculture. But the work of these ministries is restricted and greatly hindered by want of funds. Very often, before any substantial results are obtained, it is interrupted because the money voted is exhausted. The Medical Research Council also is hampered by financial considerations, and one sometimes wonders whether those under whose direction the work is done have really an absolutely free hand. Large organisations of this kind, whether supported by Government or by private associations with large committees, have of necessity to produce reports at stated intervals, and these reports must contain results of work done. Not uncommonly that work is unfinished and not thoroughly controlled; the investigators fully realise this, but the committee has to be satisfied, and the subscribers expect results for the money they have given.

Danger of Directing Research.

I think these large organisations have other decided disadvantages. It is a necessity that there should be someone directing the different branches of the research carried on. He may be a very able man, and he usually is. He forms his plan of investigation, and his workers having that plan before them pursue lines which lead to the central point in that plan. There is the one brain which dominates and the investigator must not follow side-tracks. Of all new information which comes to him during the course of his investigation, only that information can be accepted which seems to help him along the special track which has been chosen, and if the track is wrong then a new track has to be found, and months, and even years, of research have merely led to an impassable wall.

I do not underrate the value of such work—barren though the final result may be—but what I do deprecate is that by the establishment of central institutes there are only a limited number of tracks blazed. There are numbers of men who, given an opportunity, would see other roads, so that instead of one man planning a special line of attack there would be a dozen men possibly planning a dozen lines, with an increased probability of success. For this reason, but not for this alone, I would urge that research centres should be as widespread as possible.

Disadvantages of Research Institutes.

The research institute is generally divorced from the hospital, and it is almost inevitable that the clinical side of disease in the human subject should be ignored in favour of animal experiment. If progress is to be made it is, to my mind, essential that the hospital and the research department should be closely associated, and the research worker should, by preference, be a man with experience as a clinician. But in practice we find our research institutes staffed by young men—very often brilliant young men—who have just qualified and whose real experience of disease is extremely limited. Is it to be wondered at that much of what they do has little or no bearing on the problems of the everyday practice, and that the laboratory worker is becoming more and more a pure scientist, separated entirely from the clinician? Let me say, in passing, that the laboratory worker is not altogether to blame, for many clinicians show no desire to a the pathologist or to give him any facilities for keepi in touch with the sick man. The research institu I believe, helps in this separation; certainly the would be less tendency towards it if the resear laboratory were intimately associated with a hospit as most of our university laboratories are.

Again, it may be asked, is the money expended the best advantage? I am not here concerned wi places like the Rockefeller Institute, which have hospital attached and where there is neither financ restriction nor an obligation on the research work to show cause for his existence, but I refer rather the ordinary research institute with its elabora buildings and equipment. The administrative expen are usually very heavy. Much of this expense co be avoided—or, at any rate, the money be m advantageously spent—if the workers were dist buted over the various laboratories now in existen and these research centres spread widely over t country.

Organisation versus Initiative.

We all rejoice in the present great national app for cancer research, but how will the money be use A great research worker said to me a few weeks ag "This appeal has killed cancer research."—"Why I asked. "Because we are out for something bi he answered, "something that will appeal to t people. The man who has been working quietly a steadily in his own laboratory—hampered, it is tr by want of funds—is likely to be absorbed into institute; his initiative will be crushed because he l to work along a plan made by a director, and mon which could be used to finance these individual work will go to the erection of buildings—e.g., can hospitals—and to administrative expenses." T may be a pessimistic view, but it is one which dema our earnest consideration. I am still a believer the individual worker, financed properly—one w uses his own brains, thinks out his own problems, a gets himself in touch with his fellow workers in t same field, and discusses with them his ideas. Tea work has been tried, but I venture the opinion th most men who have had experience of it are looki forward to the funeral rather than to the festival.

A contemporary writer speaks of the loss efficiency consequent on "subjecting policy to t constant censorship of uninformed critics" as one the evils of democratic government. This censorsl and this criticism in research is one of the great evils of the committee system of directing it.

We have seen some evidence of this in the rec reports on cancer research. For instance, the very f that public discussion of the lead treatment of can has been necessary at this stage is because the wh research on cancer has come under the auspices o Committee which must publish its results in order stimulate the public to raise more money. I say th such public discussion has done a great deal of ha to the progress of the research.

A Better Way.

If the local authorities will agree to give facilit in their various hospitals and institutions and t universities and colleges will place their laborato and their trained staff at the disposal of these worke then the thing, administratively, is accomplish The administrative expenses would be small, as t laboratories at present in existence at the universit could be used and the head of the university depa ment would supervise the work. Thus, there wo be no expenses for building, and very little apparatus and materials, and the supervising he would, I have little doubt, in most cases, if not in accept the responsibility without extra payment. T main payments would be to the research worke and these should be paid by the local authorit These research workers are, in my opinion, as muc necessity in the hospitals of the local authorities the resident medical officers, but they must be n who have been trained, and they should have,

* Abridged from a presidential address delivered before the Section of Bacteriology, Pathology, and Biochemistry of the Royal Institute of Public Health at Dublin on August 15th.

st, an equal status, financial and otherwise, with senior resident medical officers. They must be sely in touch with the clinical work of the hospital t should have all the advantages of the senior lical officers, with whom they must be in constant aboration.

Let me here say that I do not mean by research ordinary routine examinations which so often stitute the work of the hospital pathologist, nor I mean the ordinary class of work—often designated earch—which is so often produced by the man whose object is to get a higher degree. I mean a real estigation which has for its object the solution of a blem which will throw some light on the cause or atment of disease.

Collaboration of Universities.

Let me outline briefly what I consider should be ne. In the first instance, that local authorities in neighbourhood of a university town should appoint least one qualified research assistant who would e free access to their hospitals and have at the ne time the facilities of the university laboratories, t that the head of these departments should act as isor to the research worker. Laboratory assistance uld be necessary, as the research worker should not required to do a lot of mechanical work which could quite efficiently done by a partially trained man. ould put the maximum annual cost for each research ker at £1500 to cover salary, assistance, and terial. With the appointment of a number of such kers the problems of disease would thus be attacked ng different aspects by a series of workers, all ficiently remunerated to go on for several years, l advised by men of different ideas and different s of thought. They would have facilities of the t, and I am confident that in a very short time the enditure of money would be fully justified. My tention is that with available funds it is far better endow the individual effort than to endow an titute which has certain disadvantages.

The history of medicine goes to show that the atest discoveries and the greatest advances have n made by workers who have worked along inde- dent lines, and who have not been under the trol of special research and other committees, ays on the outlook for reports and publications. identally, I would add that I think it would be a d thing if the scientific medical journals could be pressed for a few years, so that much of the ligested literature of to-day might find its way the waste-paper basket before, and not after, blication.

Research in our universities has been badly anised, hampered on all sides by want of funds t by the lack of hospital facilities. If the money nt on the bricks and mortar, on the equipment, and the maintenance had been spent on university oratories already built and already fairly well ipped, then it would have been more abundant t probably more valuable. Everyone must recog- e that in a University the heads of departments are y with teaching and administration, and research st take a second place, but universities should be ficiently financed to be able adequately to staff ir department so as to relieve the man with the cial capacity for research from much of the routine ministrative and teaching work of the department. ould not free him altogether from teaching, because hink the divorce of teaching and research is remely bad, particularly for the teacher, and in a er degree for the research worker. The University, vever, should be able to relieve the research man m much routine work by giving him satisfactory istants, and at the same time to encourage the it of research among its younger teachers.

An Appeal to Local Authorities.

t may be asked whether this is legitimate work for local authorities. To me it appeals as essentially ir work. Research deals not only with the discovery the cause of the diseases, but with the means of protection against them; the funds for this must come mainly from the national purse and from local authorities. I am not dealing to-day with research under Government control, but would merely say in passing that it is not creditable to our country the way research, in all its branches, is starved. My appeal to-day is to the enlightened local authorities, that they should devote a certain amount of money to systematic research in the laboratories established in their neighbourhood just as they devote money to the treatment of disease. What a stimulus would be given to research if our local authorities were to give even one-tenth of the money they are now spending on administration to existing research laboratories.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 11TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 111 (last week, 126); scarlet fever, 1334; diphtheria, 787; enteric fever, 222; pneumonia, 499; puerperal fever, 58; puerperal pyrexia, 90; cerebro-spinal fever, 12; acute poliomyelitis, 10; acute polio-encephalitis, 1; encephalitis lethargica, 14; continued fever, 1; dysentery, 4; ophthalmia neonatorum, 128. No case of cholera, plague, or typhus fever was notified during the week.

The following counties each notified three or more cases of enteric fever:—London, 69; Bucks, 3; Devon, 5; Essex, 9; Hertford, 3; Kent, 6; Lancaster, 13; Middlesex, 9; Northumberland, 3; Nottingham, 9; Southampton, 3; Surrey, 45; Warwick, 7; Wilts, 4; Yorks, West Riding, 6. The total of 222 includes 147 cases of paratyphoid fever, of which 57 were notified in London and 35 in Surrey.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on August 14th–15th was as follows:—Small-pox, 11 under treatment; scarlet fever, 1614; diphtheria, 1618; enteric fever, 97; measles, 226; whooping-cough, 207; puerperal fever, 12 (plus 9 babies); encephalitis lethargica, 71; poliomyelitis, 12; "other diseases," 15. At St. Margaret's Hospital there were 18 babies with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 5 (1) from enteric fever, 11 (1) from measles, 6 (1) from scarlet fever, 22 (2) from whooping-cough, 22 (5) from diphtheria, 60 (19) from diarrhœa and enteritis under two years, and 15 (3) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London were reported from Liverpool, Salford, Preston, and Sheffield. Of the 20 fatal cases of whooping-cough outside London 3 were reported from Birmingham and 2 each from Liverpool, Manchester, and Newcastle-on-Tyne. Glasgow reported 7 in the same week. Belfast reported 5 fatal cases of measles. The youthful deaths from diarrhœa show scarcely any increase.

The number of stillbirths registered during the week was 254 in the great towns (corresponding to a rate of 42 per thousand births), including 45 in London.

THE LATE COLONEL J. ARNOTT.—The death occurred on August 18th at Kirtlebridge, Dumfriesshire, of Lieut.-Colonel James Arnott, formerly of the Indian Medical Service. The son of Dr. John Arnott, he was born in India in 1845, and went back to the East soon after qualifying in medicine in the University of Glasgow in 1866. He served throughout the Abyssinian Campaign of 1866–68, and was in Afghanistan in 1879 and the two following years, seeing service at Kandahar and being twice mentioned in despatches. He retired from the Indian Medical Service in 1898 after 31 years of medical work, during which he occupied the chairs of pathology and midwifery at the Grant Medical College, Bombay, and held appointments as honorary obstetric physician to the Sir J. Sejabhoy Hospital, and as physician in charge of the St. George's Hospital in the same city. After his retirement Colonel Arnott was a member of the board of the Simpson Memorial Hospital and the Victoria Hospital for Consumption at Edinburgh, and was for many years adviser to the Colonial Office for Scotland.

Medical News.

THE IRISH DENTISTS ACT.—The Dentists Act, which has received the signature of the Governor-General of the Irish Free State, imposes certain duties on the Medical Registration Council. In the first place, it will be the duty of the Council, on request by the Minister, to nominate three members of the Dental Board. These will be the first members of the Board to be appointed, and it will be their duty, together with the member nominated by the Executive Council, to proceed with the election of the remaining members. Further, after the establishment of the Register, the Medical Council will have the duty of satisfying itself that the standard of theoretical and practical knowledge required at the qualifying examinations in dentistry is such as to guarantee the possession of knowledge requisite for the efficient practice of dentistry or dental surgery. The Medical Council is, therefore, the supervising authority in regard to education, but all disciplinary powers are given to the Dental Board. In this respect the Irish Act differs from the law in force in Great Britain. In the form in which the Act passed, there is no interference with the privilege of registered medical practitioners to practise dentistry or dental surgery.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, August 27th, a two weeks' course will begin at the Queen Mary's Hospital, Stratford. This is an all-day course, and instruction will be given in medicine, surgery, and the specialties. From Sept. 11th to Oct. 5th, on Tuesdays and Saturdays at 11 A.M., there will be lecture-demonstrations on Psychological Medicine at the Bethlem Royal Hospital. From Sept. 17th to 29th four courses have been arranged. The Queen's Hospital, Hackney-road, will give a course on Diseases of Children occupying the whole of each day. Lecture-demonstrations in ophthalmology will be given during the afternoon by the staff of the Royal Eye Hospital; an all-day course in orthopædics will be held at the Royal National Orthopædic Hospital; and the Westminster Hospital will give a course, also intensive, in medicine, surgery, and the specialties. From Sept. 26th to Oct. 17th a series of lecture-demonstrations in electrotherapy will be given at the Royal Free Hospital. Copies of all syllabuses and information about the General Course at the affiliated hospitals may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

THE LATE MR. W. M. OAKDEN.—The death occurred on August 12th of William Marshall Oakden, B.Chir. Camb., F.R.C.S. Eng., medical superintendent of St. Luke's Hospital, Lowestoft. Mr. Oakden, who was in his forty-second year, was educated at Peterhouse, Cambridge, entering St. Thomas's Hospital with an entrance scholarship and taking the Bristowe medal. Qualifying in 1911 he served as house surgeon, casualty officer, and medical officer in the infectious wards of his own hospital. During the war he went out with the Salonika expeditionary force, and acted as temporary assistant surgeon at St. George's Hospital. After experience as senior assistant medical officer at Queen Mary's Hospital, Carshalton, he was put in charge of the large convalescent hospital at Lowestoft, where the Metropolitan Asylums Board deals with all its cases of adult surgical tuberculosis.

Vacancies.

For further information refer to the advertisement columns.

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.
Barry Accident and Surgical Hospital.—H.S. At rate of £200.
Bath, Royal United Hospital.—H.P., H.S., and Asst. H.S. At rate of £120 and £100 respectively.
Bedford County Hospital.—H.S., also Asst. H.S. At rate of £175 and £130 respectively.
Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.
Bradford, Children's Hospital.—H.S. £120.
Bristol General Hospital.—H.P.'s, H.S.'s, &c. All at rate of £100.
Bristol Royal Infirmary.—H.P.'s, H.S.'s. Also Dental H.S. Each at rate of £80.
Cairo, Egyptian Government Public Health Dept.—Director of Endemic Diseases Section. L.E. 900 to 1140.
Cairo, Egyptian University.—Faculty of Medicine: Professor of Forensic Medicine. L.E. 1500. Also Prof. of Clin. Surg., &c.
Calcutta School of Tropical Medicine and Hygiene.—Professor of Tropical Medicine.
Carlisle, Cumberland Infirmary.—H.S. At rate of £175. H.P. At rate of £155. Also H.S. to Special Depts. At rate of £150.
Carmarthen, Joint Counties Mental Hospital.—Jun. Asst. M.O. £300.
Chester Royal Infirmary.—H.P. £120.
Dreadnought Hospital, Greenwich.—H.P. and H.S. Each rate of £110. Also Surgeon to Out-patients.
Hayward's Heath, King Edward VII. Memorial (Eliot) Hospi Hon. Surg.
Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—H At rate of £110.
Hospital for Women, Soho-square, W.—Res. M.O. At rate £100.
Hull, City and County of Kingston-upon-Hull.—Asst. M.O £600.
Kingston-on-Thames, Surrey County Sanatorium, Milford, n Godalming.—Sen. Asst. Res. M.O. £500.
Leicester Royal Infirmary.—Res. M.O.'s. Each at rate of £1
Lincoln County Hospital.—Jun. H.S. At rate of £150.
Liverpool, David Lewis Northern Hospital.—Surg. Reg. Asst. Pathologist, Surg. Reg., Tutor and Asst. Patholog Each £145. Also Med. Reg. and Tutor. £120.
Lowestoft, St. Luke's Hospital.—Med. Supt. £800.
Manchester, Monsall Hospital for Infectious Diseases.—Sec Asst. M.O. Also Jun. M.O. At rate of £375 and £ respectively.
Manchester, Park Hospital, Davyhulme.—Three R.M.O.'s. at rate of £150 and two at rate of £120.
Manchester, Royal Children's Hospital, Gartside-street.—A M.O. At rate of £150.
Manchester, Royal Children's Hospital, Pendlebury.—Res. Su Officer. At rate of £125.
Metropolitan Ear, Nose and Throat Hospital, Fitzroy-square, W H.S. £150.
National Hospital for Diseases of the Heart, Westmoreland-str W.—Res. M.O. At rate of £150.
Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. H At rate of £100. Also Res. Sen. H.S. and Res. P. E at rate of £95.
Newport, Mon., Cefn Mably Hospital, Michaelstone-y-vedw Asst. Res. M.O. £200. Also Third Asst. Res. M.O. South Wales Sanatorium, Talgarth, near Brecon. £200
Nottingham City Mental Hospital.—Jun. Asst. M.O. £350.
Plymouth, South Devon and East Cornwall Hospital.—H.S. rate of £50.
Prince of Wales's General Hospital, Tottenham, N.—F Anæsthetist. At rate of £120.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W Asst. Res. M.O. At rate of £80.
Rochester, St. Bartholomew's Hospital. H.P. At rate of £17
Royal Air Force Medical Service.—Commissions.
St. George's Hospital Medical School, S.W.—Pathologist Lecturer in Pathology. £575.
St. Mary Abbot's Hospital, Kensington.—Part-time Patholog &c. £650.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Gard W.C.—H.S. At rate of £75.
Salford Municipal Maternity Home and Babies' Hospital, Seedl terrace, Pendleton.—Asst. Maternity and Child Welf M.O. £600.
Samaritan Free Hospital for Women, Marylebone-road, N.W H.S. At rate of £100.
Truro, Royal Cornwall Infirmary.—H.S. £170.
University College Hospital Medical School.—Radcliffe Croc Travelling Scholarship in Dermatology. £280.
University of London, S. Kensington, S.W.—William Ju Mickle Fellowship. £200.
Wandsworth Borough Council.—Locum Tenens, Asst. M.O. &c. £10 10*s.* weekly.
Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £1
West London Hospital, Hammersmith-road, W.—H.P. and t H.S.'s. Each at rate of £100.
Western Australia Lunacy Dept.—Jun. Asst. Res. M.O. £456
Weston-super-Mare Hospital.—Res. M.O. £130.
Wolverhampton and Staffordshire Hospital.—H.S. At rate £150.

The Chief Inspector of Factories announces the follow vacant appointments for Certifying Factory Surgeons Hawes (Yorks, North Riding), Youlgreave (Derbyshi Southport (Lancashire), Torpoint (Cornwall), and Ol (Bucks).

Births, Marriages, and Death

BIRTHS.

BYRD.—On August 19th, Dr. Elizabeth C. Byrd (née Pow the wife of Dr. John D. Byrd, St. Aubyn, Cecil-aven Ashton-on-Mersey, of a son.

GODDARD.—On August 15th, at Lincoln House, Hemel Hem stead, to Gladys, wife of Dr. T. R. Goddard—a son.

RAINER.—On August 17th, at "Shirlands," Herne Hill, S.E. to Kathleen, wife of Dr. Charles Farrell Rainer—a daugh

MARRIAGES.

JARMAN—CUMMING.—On August 15th, at St. Maryleb Parish Church, W., Mr. Ronald Jarman, L.R.C.P. Lo M.R.C.S. Eng., and Mary Putnam, only daughter of late Mr. James W. Cumming, of Huddersfield, and Cumming, of Haslemere, Surrey.

DEATHS.

SYME.—On August 14th, suddenly, William Smith Syme, Se M.D., F.R.F.P. & S. Glasg., F.R.S.E., of 11, Lynedo crescent, Glasgow.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notice Births, Marriages, and Deaths.

Ingleby Lectures

ON

SOME RECENT ADVANCES IN OUR KNOWLEDGE OF

RICKETS AND ALLIED DISEASES.

Delivered at the University of Birmingham

BY LEONARD G. PARSONS, M.D., F.R.C.P. LOND.,

PHYSICIAN TO THE CHILDREN'S AND GENERAL HOSPITALS, BIRMINGHAM.

LECTURE I.*

THE renaissance of medicine, or perhaps it were better to say the birth of physiology, occurred exactly 300 years ago, when the immortal William Harvey published his treatise "Exercitatio Anatomica de Motu Cordis et Sanguinis." It is interesting to speculate on the connexion between this event and the recognition of the disease which forms the subject on which I have chosen to speak. There is no doubt that Harvey's discovery profoundly impressed the scientific world of his time; indeed, his work was universally accepted, and "inculcated as a canon in most of the medical schools in Europe" during his own time. I think that there can be no question that his discovery stimulated many of the doctors of his time to closer observation and led to the recognition of rickets. Although it seems certain that rickets existed at least 200 years before Harvey's day, yet it only appears for the first time in the list of diseases of the London yearly bills of mortality in the year 1634. During the early seventeenth century these bills seem only to have been printed in years of extraordinary mortality. The earliest known copies belong to the year 1625, and there are bills extant for 1629, 1630, 1631, 1632, 1633, 1634, &c., but it is only in the year 1634 that rickets occurs as one of the causes of death. It is probable, however, that Harvey's work had an even more important influence on the knowledge of rickets, since in the year "De Motu Cordis" was published, Francis Glisson was Surgeon in Greek, and in the following year Dean of Caiusville and Caius College, Harvey's own College. It surely must be something more than a mere coincidence that he should then turn his attention to Medicine, proceeding to the degree of doctor of Medicine in the year 1634. Glisson later became one of the members of a small society which met weekly in London for the purpose of promoting inquiries into natural and experimental philosophy, and which after the Reformation developed into the Royal Society. Seven members of this Society, all Fellows of the Royal College of Physicians, "communicated to each other their observations concerning this new disease. From these it was thought proper to make extracts and compose an express treatise on the subject, the care of which was unanimously delegated to Drs. Glisson, Bates, and Regemorter. The plan at first agreed on was that each should take a separate part of the work and complete it. But on Dr. Glisson finishing his, which contained an investigation of the cause of the disease, to the satisfaction of the other two, but with many opinions peculiar to himself, they changed their design and committed to him the planning of the whole work that all its parts might be congruous and dependent on each other." This book, which it will be remembered bore the title "De Rachitide seu morbo Puerili qui vulgo the Rickets dicitur," was a masterly treatise on what he considered to be an entirely new disease which had arisen some 30 years previously in Somersetshire and in his native county of Dorset. The impression created by this work was shown by the fact that rickets has ever since been known in Germany as the English disease.

Although Glisson attributed rickets to disturbed nutrition by arterial blood and believed that the bone changes were due to excessive vascularity, yet it is true to say that according to his conception rickets was a disease of the bony skeleton. He suggested the title rachitis for two reasons, partly because of its likeness to the word "rickets"—the name applied to the disease by the common people—and the other because the vertebral column was so frequently affected in this disease, ραχις being the Greek word for spine. Rickets, on the other hand, is probably derived from the Anglo-Saxon word wrickken (to twist), and was applied to the disease because of the deformities which characterised severe cases. This word has passed into common usage in our language; thus we speak of a rickety chair or table, a phrase which calls up in our minds the picture of a piece of furniture which can well be compared with that of a child suffering from severe rickets whose twisted limbs are ill-adapted to support its weight. Although it is true that the characteristic changes are to be found in the skeletal system, and particularly in that part of the skeleton which is growing rapidly, the view that rickets is a disease of bone is quite wrong. This idea, however, dominated the study of rickets for over 250 years, and it is only fitting that, as the birth of our knowledge of rickets can be claimed for an Englishman, its renaissance and the origin of the present conception of rickets should be shared equally by a Scotsman, Leonard Findlay, and an Englishman, Gowland Hopkins. The modern view of rickets, evolved during the last 15 to 20 years, is that the disease is a general nutritional or metabolic disorder which affects every system of the body, the early symptoms bearing no direct reference to the skeleton. Thus, rickets may show itself as a respiratory disorder in recurring attacks of bronchitis; as a gastro-intestinal affection in recurring diarrhœa; as a nervous disorder in tetany, convulsions, &c.; as a muscular disease in severe hypotonia; but eventually characteristic bone changes always occur. The development and proof of this theory has been in a large degree the work of numerous British and American investigators, and furnishes a most striking example of the interdependence of laboratory research and clinical medicine.

In order to understand how recent researches have added to our knowledge of the very complex problems of the ætiology and cure of rickets, it is necessary to have some knowledge of the radiographic appearances, the chemical processes involved in the deposition of bone, and the histological characters of normal and rachitic bone.

HISTOLOGY.

A longitudinal section of a long bone of an infant shows a clean cut end (epiphyseal line) to the shaft (diaphysis), and a disc of whitish cartilage (epiphyseal cartilage) between this and the bony epiphysis in those instances in which ossification of the epiphysis has occurred. In a rachitic bone quite a different picture is obtained. The width of the epiphyseal disc of cartilage is considerably increased. There is no epiphyseal line, but its place is taken by an irregular frayed end to the diaphysis. This frayed end, which is more vascular than normal, is usually scooped out and expanded laterally, the result of pressure, thus producing the clinical sign of enlargement of the epiphysis. To this altered extremity of the diaphysis the term metaphysis is applied.

Microscopical examination of the growing end of a normal bone reveals in passing from the epiphyseal cartilage to the diaphysis, first, ordinary hyaline cartilage followed by the zone of cartilage proliferation in which the cartilage cells become increased in number and then arranged in columns of 6 to 15 cells. The cells eventually become larger, and the number in each space increased. The cell columns are separated from each other by columns of hyaline matrix. This area is followed by the zone of provisional calcification in which lime salts are

* Lecture II. will appear in a coming issue of THE LANCET.

deposited in the columns of matrix. As a result the columns become rigid and thus direct the budding capillaries from the marrow up against the cartilage cells, which are either destroyed by erosion or become lost in the medullary spaces. The columns themselves are then partly destroyed and partly act as centres round which osteoblasts arrange themselves and form bone which at first contains no calcium and is known as osteoid. In health this osteoid layer is only a narrow area in which calcium is soon deposited and true bone formed.

In rickets this orderly arrangement is completely lost. The zone of cartilage proliferation is increased vertically and laterally, the columnar arrangement being at first manifest, but the cells in the column are more numerous and soon this design is lost and the cells appear as masses in a hyaline matrix. The zone of provisional calcification is absent, with the result that the marrow vessels grow in all directions. The osteoid layer is greatly thickened and forms the rachitic metaphysis; in it are islands of cartilage cells, wide spaces containing marrow, and in its deeper parts irregular depositions of calcium forming true bone and producing the characteristic dentate frayed appearance of the end of the metaphysis.

When healing takes place, the first thing to occur is the deposit of calcium in the cartilage where the zone of provisional calcification should have been. This at first is a thin irregular line, but as healing advances it thickens, depositions of calcium occur in the osteoid tissue, and the cartilage in the metaphysis gradually disappears. Osteoid tissue is also present under the periosteum in larger amounts than normally, producing irregular masses, buttressing, and the elimination of the sharp angles, borders and prominences of the long bones, and giving rise in the membrane bones of the skull to bossing.

The typical microscopical findings in rickets are: (1) the presence of large amounts of osteoid tissue; and (2) the substitution of disorder for order.

Radiographic Manifestations.

These are best studied in the lower end of the radius. Except in very slight cases the bone trabeculæ are more coarse and blurred than normal. This coarsening increases as the disease advances and becomes very marked in severe cases. The appearance of the metaphysis varies with the degree of activity of the child, and, therefore, with the severity of the disease. In those children who are not too ill to be fairly active the end of the diaphysis is scooped out and expanded laterally, the so-called "champagne-glass" appearance. The distance between the epiphysis and the diaphysis is increased, and in place of the sharp epiphyseal line there is an irregular frayed margin. The frayed-out ends of bone gradually fade away towards the epiphyseal disc of cartilage until no bone shadow is seen. This is the characteristic appearance of the rachitic metaphysis in what has been called by Wimberger the active form of florid rickets. The appearance, however, is not seen in all the long bones even in this active form; for instance, it is never seen at the lower end of the humerus. If the disease is so severe that the child is unable to crawl or walk, the passive type of florid rickets is found. In this variety the distance between the epiphysis and diaphysis is still greater, but the transition from bone to cartilage is much more abrupt than in the active form of florid rickets. Although the end of the diaphysis is not sharply defined, yet the irregular fraying is not marked, neither is there any scooping out, nor lateral expansion of the diaphysis.

When healing commences a line of shadow appears at a short distance from the end of the metaphysis. This line is due to the formation of a zone of provisional calcification, and represents the epiphyseal line in a normal bone; its distance from the diaphysis depends upon the width of the rachitic zone of the osteoid tissue, and varies directly with the duration of the disease. As improvement continues the space between this line and the diaphysis is gradually filled in by bone in the form of striæ; the shadow of the whole bone increases in intensity; and the epiphyseal line become more dense and regular, until eventually the end of the bone shows a normal appearance. The epiphyseal line may remain slightly wavy for some time and the thickened striæ in the diaphysis behind the metaphysis can be distinguished for many months after healing is complete. In some cases of the passive type the first sign of healing is shown by the development of shadows at the margins of the metaphysis, suggesting the development of a mild degree of the cupping which is so characteristic of the active type. As the bone heals the subperiosteal osteoid tissue also ossifies and becomes evident in the radiogram along the shafts of the long bones, particularly the radius, ulna, fibula, and humerus.

Mechanism of the Deposition of Calcium Phosphate as Bone.

This is a somewhat complicated problem, but viewed in its simplest terms we may, with Howland, regard the serum and circulatory fluids as normally saturated or supersaturated solutions, in which the calcium phosphate of bone is in equilibrium with the dissolved salt and this in turn with calcium and phosphate ions. This relationship can be expressed thus:—

$$[Ca^{++}]^3 + [PO_4^{\equiv}]^2 \rightleftharpoons Ca_3(PO_4)_2 \rightleftharpoons Ca_3(PO_4)_2$$

Ionised. In solution unionised. Solid in bone.

An increase in calcium or phosphate ions will cause the reaction to proceed to the right and result in the deposit of bone, whereas a decrease in concentration would result in some of the solid calcium phosphate in bone going into solution, the reaction proceeding to the left. According to mass action law, at equilibrium the product of the concentration on one side of the equation divided by the product of concentration on the other side is constant at constant temperature, and therefore:—

$$[Ca^{++}]^3 \times [PO_4^{\equiv}]^2 = K[Ca_3(PO_4)_2]$$

Now tertiary calcium phosphate is a sparingly soluble salt and in such—

$$[Ca^{++}]^3 \times [PO_4^{\equiv}]^2 = K.$$

This K is called the solubility product constant and whenever the product of the concentration of calcium and phosphate ions becomes greater than the solubility product, solid calcium phosphate will be deposited.

The problem is, however, not quite so simple as this, and at least one other factor must be taken into account—i.e., the presence in the serum of carbon dioxide in considerable concentrations. This has an influence on tertiary calcium phosphate which may be expressed thus:—

$$Ca_3(PO_4)_2 + 2\,H_2CO_3 \rightleftharpoons 2\,CaHPO_4 + Ca(HCO_3)_2 \rightleftharpoons [Ca^{++}] + [HPO_4^{=}]^2 + [Ca^{++}] + [HCO_3^{-}]^2$$

If the carbon dioxide tension of this solution be reduced, the reaction will proceed to the left and calcium phosphate will be deposited if the solubility product is exceeded, as it will be, since the solution is saturated. Now when the plasma substances dicalcium phosphate and calcium bicarbonate, arrive at the osteoid and diffuse into the interstitial spaces the concentration of carbonic acid falls below the plasma level and therefore precipitation occurs.

In rickets the bicarbonate factor is unaltered from the normal, but calcium and/or phosphorus may be. An index of the reduction in the plasma of the material required for calcification could be obtained if it were possible directly to measure calcium and phosphorus ions. Unfortunately, there is no generally accepted method of doing this, but Howland

gested that the product obtained by multiplying al calcium by total phosphorus would serve as an ially reliable index, and formulated the following e. The product of the concentration of phosphorus l calcium in the serum, expressed as milligrammes cent., in the normal child is between 50 and 60; en the product is below 30 rickets is usually present. ien it is above 40 either demonstrable healing is ing place or there has never been any rickets. th products between 30 and 40 rickets is usually sent.

Robison does not agree with the view that the osition of calcium phosphate as bone is purely physico-chemical process, but maintains that the eoblasts and the hypertrophic cartilage cells of the ng animal secrete a very active phosphatase which, hydrolysing the hexose phosphoric esters of the od, brings about a local increase in the phosphate-concentration, with the result that the solubility duct of tertiary calcium phosphate is exceeded l the solid salt is deposited. Together with itland, he has proved the complete absence of this erase from cartilage in the early stage of bone velopment before the beginning of ossification. e beginning of ossification in the embryo is one of the mbling-blocks in Howland's theory, for whilst a urated solution might deposit calcium phosphate coming into contact with solid bone, in embryonic tilage there is no such bone. Howland's theory is more commonly accepted, and his rule is in the in borne out by clinical observations; but it aks down in renal rickets, and in my opinion the cium phosphorus ratio is of even greater importance n the calcium phosphorus product.

Both Howland and Robison hold that rachitic ne is just as able to deposit bone as is the normal ne—i.e., the fault does not lie in the bone but in fluids that bathe it. Robison states that the osphatase can be demonstrated both in rachitic and rmal bone, and Howland bases his argument on ne experiments carried out by Shipley, Kramer, and nself, some of which it was my privilege to see. ces of rachitic bone were placed in blood serum tained from a normal child, or in aqueous solutions taining calcium and inorganic phosphate in which concentrations of phosphorus and calcium proximated to those of normal blood serum. ese were then incubated at 37° C. and after a time ical calcification occurred. Such calcification, wever, did not occur when the slices were placed serum from a rachitic child or in aqueous solutions he concentration of calcium and phosphorus were dequate. Hence rachitic bone tissue is just as le to deposit calcium phosphate as is normal bone sue, and it remains uncalcified only so long as cium and phosphorus are supplied to it in such v ionic concentrations that precipitation of tertiary cium phosphate cannot take place. Rickets, refore, is not a bone disease, and the deformities due to stresses and strains upon a soft bone and really mechanical and not pathological changes.

In the normal infant or young child 100 c.cm. of od serum contains 10–11 mg. of calcium and 3 mg. of inorganic phosphorus, whereas in rickets re is considerable diminution in phosphorus, which y even be as low as 1 mg. per cent. A low serum cium is rarely found with uncomplicated rickets, t does occur in tetany, in cœliac, and, sometimes, renal rickets. In rats, on the other hand, it is ssible to produce rickets associated with either low cium and normal phosphorus (low calcium rickets), normal calcium and low phosphorus values (low osphorus rickets) by feeding respectively with a t that is defective in calcium or in phosphorus. low concentration of either of these two elements he serum can thus occur if the dietary is insufficient, t may also occur even when the dietetic supply is rmal if absorption from the bowel is impaired. If r view is correct, that the ratio of calcium to osphorus is more important than the actual con-ntration, it is possible for rickets to occur even if absorption of both elements is normal, if there is some impairment of excretion. Calcium is chiefly excreted into the large intestine and also to a small degree in the urine. There does not appear to be any primary defect in urinary or intestinal calcium excretion which ensures abnormal calcium retention; indeed, hypercalcæmia induced experimentally soon leads to death. Phosphorus, on the other hand, is excreted chiefly by the kidneys, and here we have a very different state of affairs, since in chronic intestinal nephritis there is phosphorus retention, the calcium phosphorus ratio is altered, and we have a condition which should produce a low calcium rickets, and this in fact occurs (renal rickets).

The modern conception, as I understand it, is, therefore, that rickets is a disorder of calcium and phosphate metabolism resulting from defective absorption (and retention) of these elements from the intestine and rarely from defective excretion of phosphate. As a corollary we can say that rickets can be prevented or cured by taking measures to ensure the normal absorption of calcium and phosphorus from the bowel, and their normal retention in the body.

The questions which recent research has endeavoured to answer are: 1. What are the factors influencing calcium and phosphorus absorption from the bowel? 2. What are the ætiological factors concerned in the production of rickets and how can rickets be cured? These two questions are really interdependent, or are even two ways of asking the same question, but it will be convenient to consider them both and to consider the second before the first.

Ætiological Factors.

Rickets has no single specific constant ætiological factor, but may arise from defective hygienic surroundings, particularly lack of sunshine, or from dietetic causes. There have thus developed two schools of thought—by the one rickets is regarded as a primary dietetic disease, and by the other as due to defective hygiene. The controversy between the protagonists of these theories has been severe, at times even acrimonious, although the results of recent investigation have tended considerably to the restoration of harmonious relations.

The importance of defective hygiene has been emphasised by the Glasgow School as the result of an extensive series of investigations. The hygienic conditions of children suffering from rickets were contrasted with those of normal children in the same social scale and it was shown that the rachitic children were obviously defective in fresh air and exercise, diet being apparently of secondary importance. Two of the Glasgow workers, Hutchison and Shah, investigated the occurrence of rickets in India, and found that, while low caste children did not develop rickets, the disease was common amongst high caste children who lived under the "purdah" system. Late rickets was also common amongst "purdah" women in spite of the fact that their diet and that of their children contained far more fat than did that of the low caste women.

The fact that rickets is a disease of temperate zones and very rarely occurs at high altitudes or in tropical countries, except under the conditions just described, has been known for years. But that this immunity was due to sunlight, and that sunlight could prevent and cure rickets, has only been generally recognised recently, although as long ago as 1890 Palm drew attention to the importance of sunlight in this connexion. The value of sunlight was, however, not appreciated until Huldschinsky, in 1919, showed that rickets could be cured by the action of ultra-violet rays, and Hess and Unger, in 1921, conclusively demonstrated the cure of rickets by sunlight. Although Findlay regarded lack of exercise as being the essential factor of defective hygiene, the balance of evidence points very strongly to the conclusion that the results of defective hygiene are in reality due to lack of sunshine.

Since the original statement of Kassovitz in 1884 many observers have commented upon the seasonal

incidence of rickets. The greatest incidence of the disease is in the late winter and early spring months—e.g., January to May—but the seasonal variations are much more marked in countries with a considerable amount of sunshine, such as Canada, the United States of America, and Austria, than in countries like the British Isles in which, indeed, the seasonal variations are not very obvious. It is interesting to note that coincident with the seasonal incidence of rickets there is a seasonal decrease in the calcium and phosphorus of the blood. Recent observations by Brown and Tisdall, in Toronto, have shown that there is a sharp rise in the antirachitic effect of sunshine about the beginning of March, and that the antirachitic effect of April and May sunshine is about eight times that of December, January, and February. The same investigators also found that a considerable amount of ultra-violet irradiation takes place as a result of reflected rays from the sky and clouds, the antirachitic effect of which is approximately one-half to two-thirds of that produced by what is ordinarily termed sunshine—namely, direct rays from the sun plus reflected rays from the sky. All ultra-violet rays are not of value in preventing or curing rickets. In sunshine the most effective rays are the shortest, the wave-length of which ranges from 2900 to 3130 Angstrom units. Unfortunately, in those industrial areas of the British Isles where rickets is prevalent sunshine is somewhat rare, and any that may occur is almost valueless either for prevention or cure, since the smoke pall cuts off the ultra-violet rays. Moisture of the atmosphere, such a constant feature of our climate, also cuts off many of the rays. When the atmosphere is heavy with moisture, or polluted with smoke or dust, waves shorter than 3000, or even 3100, Angstrom units may be absorbed (Hess and Anderson.)

Ordinary flint window glass completely cuts off all the curative ultra-violet rays, and, therefore, several substitutes for window glazing have been invented. The one best known in this country is Vita glass, which transmits rays down to 2900 Angstrom units. Tests on rachitic babies carried out in Boston, U.S.A., by exposing them to winter sunshine near windows, showed that Corning glass and quartz glass transmitted enough ultra-violet rays to cure rickets in very black babies, but whilst Vita glass transmitted light waves to the extreme limits of the sun rays, it did not transmit them in sufficient quantities to be of use in healing black babies during the winter months, but the observers thought that better results could be obtained if longer exposures to the sun rays were given. There are two differences between Boston and this country. In the first place, it is a city with very much less smoke than our industrial cities; and, secondly, the question of black pigmented babies is one of little importance here. Vita glass is unquestionably of value in country districts, but in my opinion it is practically useless in smoky cities.

Antirachitic powers can be conferred on certain foodstuffs by exposing them to the action of ultra-violet rays. Thus milk in both liquid and dried forms, wheat, and vegetables, such as spinach, carrots, &c., have been rendered antirachitic. On further investigation this property was found to be due to the activation of certain sterols, cholesterol in the animal, phytosterol in the vegetable compounds, and the administration of irradiated cholesterol and phytosterol was found to protect rats from rickets. Active cholesterol was also found to give a characteristic absorption spectrum in the ultra-violet region. The effect of administering irradiated cholesterol to children suffering from rickets was subsequently tried at the Children's Hospital, Birmingham, and we had the privilege of demonstrating the complete and rapid cure of a case of severe and resistant rickets. The details may be of some interest because the clinical experiment was controlled as carefully as possible.

The patient, aged 3 years, had received treatment by cod-liver oil from April to September, 1925—i.e., during the spring and summer months. He was admitted into hospital in September and for one month did not receive any antirachitic treatment, but was placed on the full hosp dietary. Radiograms taken 14 days after admission sho a slight degree of healing when compared with that ta on admission, possibly due to the effect of the cod-l oil taken before admission, but no further healing of moment occurred between the fourteenth and twe eighth days.

The child was then given 1 drachm three times a of a 3 per cent. solution of irradiated cholesterol in lins oil for a few days, and then the dose was increased 2 drachms three times a day. In three weeks considera healing had occurred, and complete healing was noted 11 weeks.

The points to notice are: (1) that the case was of a group of rickets which is somewhat resistant cod-liver oil therapy; (2) that a period was allow before starting cholesterol treatment, so that t effect of any delayed healing from cod-liver oil w eliminated; (3) that cure was produced in t autumn and winter months.

Later we used irradiated cholesterol in pow form in the treatment of cœliac disease, with a without rickets, with most encouraging results. T cholesterol used was chemically pure cholesterol a was irradiated by the method suggested by Hess.

The antirachitic power of irradiated choleste diminishes after a time; also, unless certain p cautions are taken, such as the removal of the ozo generated, prolonged irradiation renders choleste inactive again. We also found that some of t batches of irradiated cholesterol did not appear be as potent as others. As a result of certain exp ments, Heilbron, Kam, and Morton came to the c clusion that not cholesterol itself, but some substa associated with it is activated by irradiation, a Rosenheim and Webster found that chemically p cholesterol, prepared by formation of its dibro derivative and the reduction of this to choleste again, developed no antirachitic power after irrad tion. These workers showed that only choleste obtained from natural sources—i.e., bile, brain, &c could be activated, but they came to the conclusi that the impurity itself must be a sterol since formed an insoluble compound with digitonin. was suggested by Windhaus that this sterol might ergosterol, obtainable from ergot, yeast, &c., beca it was the only known sterol having a struct likely to give it the required properties. Ergoste was therefore investigated by them and also by H and was found to develop intense antirachitic pow on irradiation, being about 2000 times as strong ordinary cholesterol, and it, or a sterol closely simi to it, is now regarded as the impurity which activated when natural cholesterol is irradiat Ergosterol when irradiated is the most powe antirachitic substance known; 1/10,000 mg. protect rats from rickets, and it is estimated t 5 mg. are equivalent to 1 litre of the best cod-li oil known. Irradiation leads to an obvious physi change in ergosterol, a yellowish resin being produc How much of the substance is actually activated not known, and it is possible that further experime may yield more intensely antirachitic substances.

Diet and Vitamins.

In the clinical study of rickets two facts st out. First, that the condition often develops children who are fed on a diet rich in carbohydra but poor in fat, such as condensed sweetened skimm milk and many proprietary foods. Secondly, t in most instances it can be cured by the exhibit of cod-liver oil.

In 1918 Mellanby suggested that rickets might due to the absence of an accessory food factor, a later stated that this antirachitic factor was proba identical with vitamin A. In his view cod-liver had the strongest, and vegetable oils scarcely a antirachitic action. Milk and yolk of egg contai a large amount of antirachitic substance. Mellanb experiments and conclusions were, however, critici adversely by many people. During the war Denm exported large quantities of butter to Germany, w the result that poor people were unable to buy wh

r. Skim milk, however, was easily procurable was largely used for the feeding of infants. As a lt many of these children developed nutritional rders (dystrophia alipogenetica) often associated n xerophthalmia, which, in many instances, passed o total blindness. The proof that this condition due to lack of fat was forthcoming when the ish Government took over the supplies of butter, oned it, and allowed 250 g. weekly to each vidual, with the result that xerophthalmia ediately ceased. Bloch, who described these s, emphasised the fact that in spite of the absence at these children rarely developed rickets, and he cluded that absence of vitamin A caused xeroph-mia but did not produce rickets. By feeding on a diet deficient, amongst other things, in rickets and xerophthalmia can be produced erimentally.

n 1920 Gowland Hopkins showed that it was sible to destroy vitamin A in butter and cod-liver by heat and aeration, and in 1922 McCollum and co-workers found that cod-liver oil so treated uld no longer cure experimental xerophthalmia would cure rickets. It appears clear, then, that ely associated with vitamin A is another fat-ble vitamin which has antirachitic properties, this is called vitamin D. Cod-liver oil is a good rce of both vitamins, but cow's milk, whilst rich vitamin A, is a poor source of vitamin D. The that some fats contain considerable amounts of min A and but little vitamin D is the probable lanation of the failure of some workers to confirm llanby's experiments.

t is probable that the curative action of sunlight artificial ultra-violet irradiation in rickets is due the synthesis of vitamin D by the activation of osterol, or some similar sterol, found in association h cholesterol in the skin. Indeed, irradiated ergo-ol is so potent that it has been suggested that it pure vitamin D. Evidence that irradiation does duce vitamin D *in situ* is found in the fact that s fed on a dietary producing the low phosphorus e of rickets develop an alkalinity of the fæces, pH of which can be reduced, even to the acid e of neutrality, by irradiation or by the administra-n of irradiated ergosterol or cod-liver oil. Further dence that irradiation of the cholesterol (or ergo-ol) of the skin has a curative action is found in the ervation of Hume, Henderson-Smith, and Lucas t inunction of irradiated cholesterol into the skin abbits and rats fed on a rickets-producing dietary vented the development of rickets.

Whence comes the vitamin D present in cod-liver ? It has been stated that this is obtained from the n algæ and diatoms (plankton) in the upper waters he ocean, and that in these vitamin D is synthesised ler the influence of sunlight. This plankton consti-es the food of small fish, which in their turn form diet of the cod, and in the latter the vitamin is gely housed in the liver. The most recent researches, wever, show that, whilst the marine diatom is a n source of vitamin A, it contains no vitamin D, l the suggestion has been made that, both in tion to green plankton and green vegetables, ich contain much vitamin A but little or any D, same mistake has been made as in the earlier work Mellanby on fats when no differentiation was made ween the A and D vitamins. Moreover, Bills has wn that the principal food of the Newfoundland is the caplin, but that this does not contain enough min D to account for the amount of vitamin ich is accumulated by the cod during its mid-mmer period of fattening, and he therefore suggests t the vitamin may be synthesised by the cod.

The exposure of an animal to sunlight raises the tent of vitamin D in its milk, and for this reason w's milk shows a seasonal variation in vitamin D tent which is related to similar seasonal variations he incidence of rickets. The content of vitamin D, wever, is not greatly increased by sunlight, but can, the other hand, be considerably augmented by posing the animal to ultra-violet rays from artificial sources, although such milk will not compare in anti-rachitic power with milk irradiated directly. It seems evident, therefore, that during the winter months breast milk must be considerably poorer in vitamin D than in the summer. However, it has been proved, as in the case of cow's milk, that the anti-rachitic properties of human milk can be increased by the irradiation of the mother, and that if cod-liver oil be given to her, the vitamin D can pass into her milk. Although it is a matter of universal clinical observation that rickets is far less common in children who are breast-fed, the question of the antirachitic effect of human milk and its relationship to vitamin D is one of great interest and difficulty. This difficulty will become even greater if confirmation is obtained of some recent experiments of Hess, from which he concludes that human milk is exceedingly poor in the antirachitic substance, and that its high protective power in rickets cannot be ascribed to that factor. McCollum states that animal experiments make it clear that faulty nutrition of the mother during pregnancy and the early part of the nursing period may so debilitate her young that later a diet which should protect against rickets may fail to do so, and, according to Greenbaum, if the maternal diet during the last three months of pregnancy is made approximately correct in caloric and mineral intake, rickets will not be absolutely prevented, but the mother's diet will have a controlling influence in the development of the disease in the offspring.

Rickets, however, does frequently occur in breast-fed premature children, twins, and particularly in dark-skinned Italian and negro children living in North American cities. Prolongation of breast-feeding into the second year of life is also very liable to produce rickets. The conditions under which Eskimo children live are of great interest in this connexion. In Greenland rickets does not exist, despite the fact that children are nursed until the age of 2 to 4 years, whereas in Labrador, although the children are much more exposed to sunshine, rickets is almost universal. The Greenland Eskimo, contrary to popular belief, eats little fat, but partakes freely of uncooked fish, birds, seals, &c., and the freedom from rickets is probably due to the presence in this diet of considerable quantities of vitamin D derived from the fish on which the birds and seals feed. The Labrador Eskimo, on the other hand, cooks his food, a large proportion of which is prepared or tinned, and eats very little vegetables (Thomas).

Calcium and Phosphorus.

From what has previously been stated, it is obvious that another important factor in the dietary is an ample supply of calcium and phosphorus. Adequate supplies of vitamin D or sunshine will prevent or cure rickets even when a baby is taking a diet which, from deficiency in calcium, phosphorus, or vitamin, would otherwise produce rickets.

Of all the factors concerned in the prevention of rickets, exposure of the body to sunshine and the preservation of the natural habitat of the child and diet of the mother are probably the most important. As clothing increased, and with it the urbanisation of society, the migration into cities and darkened dwellings, or, as in the case of the negro peoples, if movement occurred into more temperate zones, or, as in the case of the Labrador Eskimo, the maternal diet so changed that the supply of vitamin D diminished, rickets developed even in breast-fed children, but with more certainty in those artificially fed. Thus we have the appearance and development of rickets associated with the progress of civilisation, and in particular, with the rise of industrialism and the decline of breast-feeding.

As a result of these recent advances in our knowledge of the ætiology of rickets, the question may well be asked: was Glisson right in his view that rickets was a disease which had made its appearance for the first time but a few years before his monograph was written? It is true that the factors necessary for the production of rickets have been present, at

least in Europe, since ancient times, although there is no reference to rickets in Hippocrates, Galen, or Celsus. Soranus of Ephesus, a physician who practised in Rome during the second century A.D., wrote thus :—

> The infant's feet become deformed from unwise attempts at walking. Frequent examples of such deformities are seen in Rome, due in most cases to ignorance and improper care of the infant. City women devote much less care to their infants than those in rural districts, hence the more frequent occurrence of these deformities among the infants of city dwellers.

Surely Findlay is justified in regarding this as a description of rickets. We have, however, even more positive evidence that rickets existed 200 years before Glisson's time, for in the paintings of the fifteenth century artists of the Netherlands and Germany, especially those dealing with the Nativity, clinical evidence of rickets can be seen. In our own National Gallery there are several pictures of this type, but I will only mention one painted by the Netherlands artist, Dirk Bouts, in the year 1490. This picture shows definite evidence of rickets, not only in the child but also in the mother, whose forehead is an excellent example of Parrot's nodes. Anyone can multiply examples of this kind by exploring the galleries of Amsterdam, The Hague, &c. It is quite clear that in choosing models for such a subject the artist would not wittingly select those showing the stigmata of disease, but rather those approaching his ideal of perfect physical development. It is surely, therefore, a logical conclusion that in the fifteenth and sixteenth centuries, when the privations of war were frequently experienced by dwellers in the Low Countries, rickets was a common condition in the industrial cities of Holland and Germany (Foote).

CARCINOMA OF STOMACH.*

By A. J. WALTON, M.S. Lond., F.R.C.S. Eng.,
SURGEON TO THE LONDON HOSPITAL.

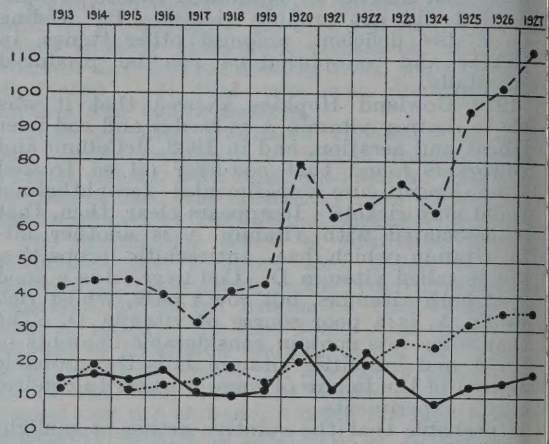
In the public mind there is a belief that cancer is not only uniformly fatal, but that it is rapidly increasing in frequency. Recent careful investigations have shown that this view is too pessimistic, and it has become quite evident that the different varieties of carcinoma vary considerably in their severity, many examples being permanently cured if subjected to early operative intervention. Of these varieties carcinoma of the stomach must, however, be considered one of the most unsatisfactory, for the early diagnosis is associated with much difficulty, and the late prognosis, as shown by more careful follow-up records, is not nearly so good as was at one time believed. It is therefore all the more satisfactory to note that there is little or no evidence that the disease is on the increase. Such a belief is based upon the returns of the Registrar-General, but these are probably of doubtful value, for with improvement in diagnostic methods cases are included that were previously omitted, and it is almost certain that many others are recorded as carcinoma when the diagnosis has not been confirmed by microscopic investigation. My own figures concern patients who have all been subjected to operation, and the diagnosis has therefore been proved either by visual inspection or by microscopical examination, confirmed in all cases by a careful observation of their after-progress. Thus, although small in number, they are of considerable interest. There has been little or no increase in the numbers operated upon year by year, whereas the proportion of cases of carcinoma to those of other lesions of the stomach has shown a very marked decrease. From 1913 to the present date the total number of cases of carcinoma of the stomach that have come to me for operation has been 229, and the total number of simple chronic ulcers 1086, the carcinomata thus forming about 17 per cent. of the total.

* Being a communication made to the International Cancer Conference, recently held in London.

In other words, of every six gastric operations c is performed for carcinoma of the stomach. T numbers of these lesions operated upon each yea shown in Fig. 1. This chart shows clearly t whereas the number of ulcer cases operated up has multiplied nearly three times the number carcinomata has remained nearly constant year year.

Of more importance than the relationship to t total number of ulcers is that to ulcers of the bo of the stomach, for it is this variety which is r

Fig. 1.



Frequency of carcinoma and chronic ulceration. Total ca of carcinoma 229 (males 166, females 63); total cases chronic ulcer 1086 (males 824, females 262).

In both figures the continuous line indicates "carcinoma," t interrupted line "all ulcers," and the dotted line "les curve ulcers."

only more likely to become carcinomatous, but most commonly confused with carcinoma eitl before or during operation. Duodenal ulcers, on t other hand, may be said never to become carcinom tous, and it is this variety which has shown t greatest increase. Nevertheless, lesser curve ulc are nearly three times as frequent in my prese practice as they were in 1913.

It must be remembered that these figures, occurri as they do in the practice of one surgeon, are evidence of an increase in the number of chro ulcers in the general population, but since the ulc have so greatly increased in number a correspondi increase would be expected in the numbers of carci mata, and since it has not occurred it would sugg that carcinoma of the stomach is becoming a l frequent disease. The only explanation I can of is that of recent years our work has been, as should always wish it to be, preventive, and th many patients have been saved from carcinoma having their ulcers treated surgically while they a yet benign.

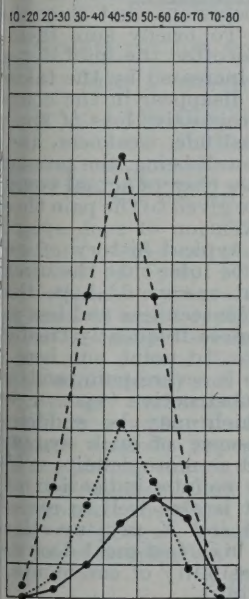
The sex relationship of the two conditions sho that whereas both carcinomata and ulcers are mu more common in the male, this frequency is more evidence in the ulcers than in the carcinoma Thus, of the 229 cases of carcinomata, 166 occur in males and 63 in females; whereas of the 10 ulcers, 824 were males and only 262 were femal There is also a distinct difference in the age-frequen Carcinomata of the stomach is found most commo between the ages of 40 and 70, the majority bei present between 50 and 60; whereas the ulcers a more frequently detected earlier, being seen m commonly between the ages of 30 and 60, and wi the greatest frequency between 40 and 50. In Fig the frequency of these lesions in the different decad is made apparent.

Results of Operation.

The operative treatment of carcinoma of t stomach has now been sufficiently long in vogue t

to obtain definite figures of the end-results. It thus be more valuable to consider whether we satisfied with these results before discussing how may more readily make an early diagnosis or prove the technical details of our treatment. en consulting the literature on this subject, there ound to be an extraordinary difference of opinion to the value of surgical treatment. The early res of Friedenwald [2] gave a most gloomy prog-is, for he found that of 1000 cases, only nine were able of having a resection, and not one case was ed thereby. Cheever [1] also found that in a series 236 cases, radical operation was only possible in per cent. Many later figures give a much more eful outlook both as regards the possibility of orming a partial gastrectomy and of the ultimate -results. Mayo [5] has estimated that a correct gnosis should be made sufficiently early to permit least 50 per cent. of radical operations, although is own series the actual number in which a partial rectomy was possible was about 35 per cent. also showed that out of 651 resections of the nach, 38·6 per cent. were alive three years or e, and 26·5 per cent. were alive five years or more r operation. Paterson [6] also states that 24 per . of cases were alive and well three years after ration, and 15 per cent. after five years. Hayem [4] nd that of 100 cases, 28 passed the three-year od without recurrence. I have given these ervations at some length, for nine years' experience a carefully controlled follow-up department has steadily strengthened my opinion that these later figures are much too optimistic, an opinion which I am not alone in holding. Gibson,[3] in a most valuable investigation in New York, states that "no sadder report of the disheartening status of cancer surgery has come to our attention." Of 70 cases of carcinoma of the stomach he found only one alive and well after five years, and also one only after three years. I regret to state that this experience is much more in accord with my own. It is true that we are all of us conversant with cases which have lived many years after operation. Hayem,[4] for instance, reports one who lived for 27 years, and Pearce Gould,[7] one who lived for 18 years and then had a recurrence. I also have seen a case operated upon by Mr. Hugh Lett in 0, when I was his registrar, which was proved microscopic examination, and who was readmitted 927 with an anæmia of the pernicious type which ht or might not have been due to a recurrence. h cases are, however, exceptional. In reviewing own series the large proportion of inoperable es is very startling. Of the 229 cases it was only sible to perform a partial gastrectomy in 78, that 33 per cent., a proportion probably smaller than ound with any other variety of carcinoma. It is, vever, in the progress of these cases subjected to at is hoped to be a radical cure that so much appointment lies. I have been making for the tish Medical Association a careful analysis of the es operated upon by myself in the years 1920–24 usive, and for the purpose of this present investiga-n I have added those cases operated upon before 1920. All the cases, therefore, have been operated upon for four or more years. They number in all 177, of which 62 were subjected to partial gastrectomy. Of these, three cannot be traced, one is well 15 years, one—the only sarcoma in the series—well 12 years, one well ten years, and one seven years after operation (see table).

FIG. 2.



-incidence of carcinoma and chronic ulceration.

Cases operated upon 1913–24	177
Partial gastrectomy	62
Not traced	3
Died of recurrence	55
Alive	4
(15 years, 12 years, 10 years, 7 years = 1 each.)	
Total cases (1913–28)	229
Secondary to ulcer	25
Diagnosed as ulcer before operation	55

The remainder have all died with recurrences, some of which only appeared three or four years after operation, and although it is true that many patients have been given two or three years of happy life in place of the three to six months' misery, which would occur with no operation, yet these results must be regarded as being among the most depressing in surgery. In placing these figures before you, I at once lay myself open to the charge of having performed incomplete operations. It may be said, and it probably will be said, that such poor results could only be obtained by insufficient removal of the stomach or glands. It may only be my conceit that makes me believe that this is not the true explanation, but in many cases a very wide resection indeed has been carried out so that it would best be described as a subtotal gastrectomy, and I am very doubtful if a wider removal could have been effected. Moreover, in nearly all the cases recurrence has later taken place either in the liver or in the deep cœliac glands. Therefore I feel certain that improvement in the late results does not lie in more extensive operations, and also that the figures I have put before you give a more correct picture of the results obtained by surgical treatment than many that have been published.

Improved Diagnosis.

In attempting to better our results, it is at once evident that improvement is to be looked for along two lines. The fact that only one-third of the total number of cases are operable is evidence that correct diagnoses are not being made sufficiently early. A large number of my patients have been under medical treatment for prolonged periods, often in the belief that a simple ulcer was alone present, a point to which I shall have to return later. This is, however, only applicable to a certain number. One of the greatest difficulties with which we have to contend is that in not a few cases the symptoms are at first so slight and ill-defined that the patient either seeks no treatment, or attempts to improve his symptoms by the use of domestic remedies, only seeking skilled advice a few days before operation, at which time the disease is already hopelessly inoperable. It is, indeed, difficult to see how any improvement can be made with this class of case, for it is not feasible to suggest that apparently healthy people should, after the age of 40, have routine examinations which would have to include a test-meal and the use of X ray investigations. Some improvement may, however, be expected in this direction if doctors will remember and if the public can be made to realise that any persistent dyspepsia occurring after the age of 40 in a patient with a clear past history is to be regarded as due to carcinoma until this disease can be definitely eliminated.

Malignant Change in Gastric Ulcer.

It is, however, along the second line that the greatest improvement is to be expected. For many years Sir Berkeley Moynihan and others, including myself, have been laying stress upon the fact that a certain number of cases of gastric ulcer tend to

become carcinomatous, and thus the improvement in the results of operation for carcinoma of the stomach lies in operating upon the ulcer in its still benign period. In the United States of America this relationship is well recognised, but unfortunately in this country there has been a tendency of late to belittle the relationship between the two lesions; probably this has in part been due to the fact that in the past it was claimed that the majority of cases of carcinoma commenced as chronic ulcers, a view which wider experience could not support, and hence there is a tendency for the pendulum to swing in the opposite direction. The denial of such a relationship has, however, gone hand in hand with extravagant claims for the value of medical treatment, and this of necessity, for if chronic ulcers may become carcinomatous it will clearly be inadvisable to subject them to prolonged periods of such treatment. It is also unfortunate that the lay press has widely circulated the view that all chronic ulcers can be cured by medical treatment, for there is now a tendency for patients to postpone operation and to undertake a prolonged course of medical treatment, a procedure which I feel convinced will lead to an increase in the number of cases of carcinomata of the stomach, and will undo much of the preventive treatment for which surgeons have striven so long.

In my own series of cases there has been very definite evidence that a certain number of cases of carcinoma have started as chronic ulcers. I have only placed in this group those that have fulfilled the following requirements:—

1. They must all have had a history of many years' standing in which the earliest symptoms were periodic.
2. They must all at the time of operation have had a relatively high test-meal.
3. The appearances of the lesion at operation must have suggested the presence of a chronic ulcer. In some cases, indeed, the diagnosis of chronic ulcer to the naked eye appeared to be definite.
4. The pathological report must have shown that the carcinoma was almost certainly secondary to an ulcer.

In my own series of 229 cases there were 25 examples which conformed with these requirements, and these, of course, do not include any examples which had progressed so far that a radical operation was not possible, or those which had led to a complete achlorhydria. Hence, this figure probably much underestimates the frequency. They are of special importance, for it is in such cases that a radical cure is most to be expected. My patient, who is alive and well seven years after operation, was only recognised to be a case of carcinoma after the microscopic examination, but a partial gastrectomy was carried out on suspicion owing to a slight alteration in the symptoms. She was therefore treated at the earliest possible stage. Of equal importance with this group are those cases which are definitely but erroneously diagnosed as simple chronic ulcers before operation, for it is these cases especially in which medical treatment is likely to be continued and the opportunities of early operation are lost. I have elsewhere pointed out that since the recent vogue for medical treatment four such cases have come to me when the carcinoma was hopelessly advanced. In my own series there were 55 such cases, a percentage of nearly 25 of the total. These had been definitely diagnosed by physicians of wide experience and repute as simple chronic ulcers, and it was only at operation that the evidence of carcinoma was forthcoming. To my mind, therefore, there can be no question whatever that the hope of greater success in the future lies not only in a wider recognition of the early symptoms of carcinoma, but also in the acceptance of the belief that chronic ulcers in patients between the age of 40 and 60 should be subjected to early operative treatment, and should not be treated medically for a long period of time. It is probably owing to such a course of action that my figures show no increase but rather a definite relative decrease in the frequency of carcinoma of the stomach, and every effort must be made not to lose this advantage.

Early Symptoms and Early Treatment.

In the recognition of the important early symptom special stress must be laid upon the fact that afte perfectly clear past history the majority of patie have developed a dyspepsia persisting for two or th weeks. I have always taught, and I am confid that it is correct, that if there is no definite error diet to account for such a group of symptoms, th patients should be regarded as carcinomatous unl definite evidence can be produced to show that th are suffering from some other lesion. It is perfec true that occasionally, if such a dictum is accept a patient will be operated upon and will be found be suffering only from a gastritis, possibly of atonic type due to overwork and worry; a care investigation will, however, often eliminate such condition. In the few remaining cases it has b my experience, much as I deprecate the use of exploratory laparotomy, that such patients are pleased to find that they are not suffering from carcinoma that they will only too willingly put with the drawbacks of an unnecessary laparotor I have been honoured by having been asked operate upon a large number of medical men, and th patients, who are those best able to realise the dra backs of operation, have been only too willing to f the possibility of an unnecessary laparotomy if in end they can be assured that no carcinoma is prese and it would seem self-evident that the line of cond which a medical man would choose for himself is one which he can best advise his patients to foll Of the individual symptoms of the different varie of carcinoma I shall say but little, for these have b described upon so many occasions that they sho now be well recognised. To briefly sum them they are the constancy and often the mild degree the pain, which, although increased by the taking food, does not completely disappear in the course the day, the steady and progressive loss of appet the increased feeling of lassitude, weakness, and loss of the usual feeling of well-being, the presence frequent regurgitation rather than of actual vomiti and the failure of relief to be given to the pain there It is especially the supervention of such sympto upon a case presenting a typical history of gas ulcer which would lead us to infer that the ulcer become carcinomatous, but one would hope that the future this change will be seen less and less as long-persistent ulcers are more frequently treated operation. It is well, also, to point out here t cases are seen where there is severe pain, and wh there is vomiting of the obstructive type, or wh there is hæmatemesis which may be sudden severe, and that the presence of such sympto which are usually regarded as more definite evide of a gastric ulcer, are no counter-indication of presence of carcinoma. It is also well to remem that although a test-meal and X ray investigat are of very great value, a high test-meal does no necessity eliminate the possibility of carcinoma, neither does a negative X ray.

Such symptoms occurring in a patient o 40 must always be regarded with the most gr suspicion, and it is by the recognition of th importance that one must hope to obtain be results in the treatment of this most danger and depressing variety of carcinoma. Although present but few cases have been cured by operat treatment, there can be no question but that a sm percentage are so cured, and of this benefit ev patient must be given the advantage at the earl opportunity, for all other methods known to us present, such as the use of radium and deep X therapy, are—useful though they may be—no m than palliative procedures. It must also be rem bered that whereas cases which are not operated u have an average expectation of life of only three six months, those who are treated by partial gast tomy not infrequently live for three or four years happiness and comfort. In my own series, 15 c showed evidence of recurrence only between

nd and third year, five between the third and th year, and two after four years. My chief on for putting these figures before you, however, impress upon you my belief that in this, as in r branches of medicine, the greatest progress has and is still to be made by the use of preventive sures. An understanding of the cause of carci- a implying, as I believe it does, a knowledge as hy a cell reverts from its unipotential character totipotential phase, still seems far from us, and that time arrives, the greatest hope of preventing inoma of the stomach lies in the free surgical oval of all chronic ulcers. If the lay press, alter- their present views, will help us with the great ht of their authority to teach the public that the rity of such ulcers should be excised, much will ccomplished in diminishing the frequency of this d disease.

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SYPHILIS OF THE ŒSOPHAGUS.

WITH A REPORT OF TWO CASES.

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YPHILIS of the œsophagus is only diagnosed in or two of every 1000 cases presenting them- es with an œsophageal lesion. It occurs, however, ll cases of acute syphilis which remain untreated l the so-called "secondary" stage is established, only as a part of the general inflammation of all ous membranes, and usually there is a complete nce of any œsophageal syndrome. It is not until condary œsophagitis is present, or a spasmodic rganic stenosis appears, that cases of syphilis he œsophagus come to the hands of the œsophago- ist for diagnosis and treatment. I shall confine e remarks, therefore, to a description of syphilis the œsophagus accompanied by the cardinal ptom of dysphagia.

Pathology.

yphilis of the œsophagus occurs rarely in the genital form of the disease. More commonly, he so-called "secondary" stage, it may give rise n œsophagitis, of such severity as to be manifested dysphagia. The condition rapidly responds to ropriate treatment, and is very seldom followed stenosis.

During the so-called "tertiary" period syphilis he œsophagus is still more common, and takes the n of localised gummata. The gumma usually es in either the upper or lower third of the canal, on rupture produces a typical gummatous ulcer h a clearly cut edge and an unhealthy yellow base. re is considerable local induration, which, together h the concomitant spasm, is the main cause of obstruction to the lumen. Leukoplakic patches y occur in the neighbourhood; some local non- cific œsophagitis may be present, together with ttle hypertrophy of the wall and dilatation of the phagus above the level of the lesion.

Diagnosis.

The symptoms are those of painless dysphagia, together with those of any other syphilitic lesion which may coexist. If, however, there is any pharyngeal lesion, painful dysphagia occurs, together with some local spasm and regurgitation.

The previous history of a case is important, and leading questions must often be asked. The history of swallowing a corrosive or caustic or excessively hot fluid, or of an impacted foreign body, especially a tooth-plate, leads the clinician to doubt the existence of a true syphilitic lesion even in the presence of positive serological tests, and is more suggestive of a simple cicatricial stricture. The same is true of dysphagia following closely upon diphtheria or typhoid fever.

The duration of the dysphagia and its mode of onset is not of great value as an aid to an accurate diagnosis except when there is a definite history. Nevertheless, certain general facts should be borne in mind. Dysphagia in a case of syphilitic stenosis has usually lasted from four to twelve months before a careful examination reveals the true nature of the lesion. During this time the patient may or may not have been treated by his own medical practitioner for "indigestion," "gastritis," "gastric ulcer," "globus hystericus" or "nerves." Dysphagia of many years' standing, in the absence of a history indicative of simple stricture, is more suggestive of cardiospasm, but can be produced by a pharyngeal pouch, an œsophageal pouch, a fibrosis in the region of the crico-pharyngeal sphincter, a congenital stenosis of the œsophagus, or even by a syphilitic lesion. The onset of specific dysphagia is almost invariably gradual. Sudden difficulty in swallowing is more suggestive of an impacted foreign body or even of a malignant growth.

When syphilitic stenosis of the œsophagus is present there is usually nothing to distinguish it from any other variety of stricture except direct local examination. General examination will frequently reveal that the patient is suffering from syphilis, and there will be no clinical signs of malignancy, such as Virchow's glands. Especial attention should be paid to the mouth and throat, as signs of leukoplakia of the tongue or inner side of the cheek are rarely absent in long-standing cases. Scars are often found on the legs, and bilateral enlargement of the epitrochlear lymphatic glands, with no local condition to account for it, is always present.

Radioscopy.—After a complete general examination of the patient radioscopy is employed in order to exclude the presence of an aneurysm or other intrathoracic cause of extrinsic pressure upon the œsophagus, and to determine the level of the lesion.

Œsophagoscopy should next be resorted to, and great difficulty may be met with in making a purely visual diagnosis. This is especially so in the non-ulcerated variety of gumma, which closely simulates an infiltrating carcinoma. An actual ulcer is more readily diagnosed, and a portion removed for microscopical examination may reveal the true nature of the disease. The diagnostician must not be led astray by a negative Wassermann reaction of the blood, which is given by a very large proportion of sufferers from tertiary syphilis. The pathological examination of the cerebro-spinal fluid will, however, almost invariably confirm the clinical diagnosis of syphilis in this stage. On the other hand, a positive Wassermann reaction must not be taken to indicate that the condition is non-malignant, and therefore biopsy must always be performed. If in a doubtful case this fails to prove suspected malignant disease, it should be repeated. After two or more microscopic examinations have failed to reveal the true cause, and in the absence of a history indicative of a simple stricture, syphilis is to be strongly suspected. The diagnosis is usually confirmed by appropriate treatment.

I wish most strongly to emphasise that syphilis of the œsophagus must not be diagnosed by symptoms and serological tests alone, because many patients who have carcinoma of the œsophagus have also active syphilis. As I have shown elsewhere,[1] it is most important that cancer of the œsophagus should be treated at the earliest possible moment; direct œsophagoscopic examination must, therefore, be made in all cases with symptoms of an œsophageal disease.

FIG. 1. FIG. 2.

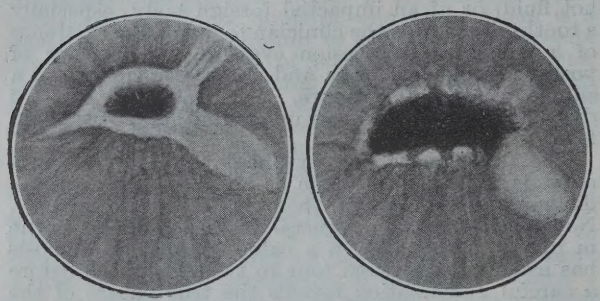


FIG. 1 (Case 1).—Syphilitic stricture of the œsophagus (cervical region) as seen through the œsophagoscope before treatment.
FIG. 2 (Case 1).—Seven days after dilatation with bougies.

Treatment.

Treatment is undertaken along two lines: (1) Anti-syphilitic treatment; (2) œsophageal treatment to combat the actual or potential stenosis.

1. In acute syphilis, arsenic is administered intravenously for eight weeks, provided it has not been previously used in large quantities in the same patient. If it has, then only a shorter course of arsenic should be given. The dose varies from 0·45 to 0·6 g. in the female, and from 0·6 to 0·9 in the male, at weekly intervals. At the same time as the arsenical injection an intramuscular injection of mercurial cream or bismuth is given. At about the middle, and at the end of this course of treatment, an intramuscular injection of 0·25 g. of contramine should be given. After the last injection of contramine the patient is allowed four weeks' rest from injections and given potassium iodide grs. 5 in plenty of water, three times a day by the mouth. After this, intramuscular injections should be recommenced, and continued once a week for eight weeks. They may consist of either gr. 1 of mercury as a mercurial cream given each week, or 0·2 g. of an oily suspension of bismuth. By far the best preparation of bismuth in my experience is iodo-bismuthate of quinine (Fraisse), and this may be used with benefit alternately with the injections of mercury. After eight injections the patient is given four weeks' treatment by medicine—either potassium iodide as before, or collosol sulphur, 1 drachm three times a day; then eight weeks on a heavy metal and four weeks on a non-metal, and so on. The arsenical treatment should not be repeated.

FIG. 5.

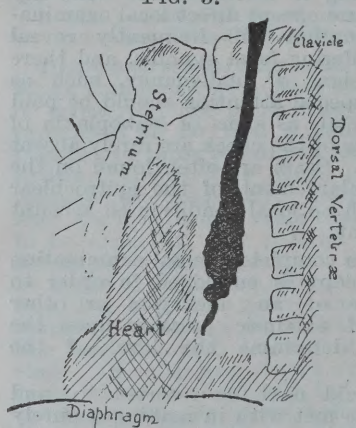


FIG. 5 (Case 2).—Diagram of radiogram of syphilitic stricture of œsophagus after swallowing radio-opaque emulsion.

[1] Abel, A. L.: The Treatment of Cancer of the Œsophagus, Brit. Jour. Surg., 1926, xiv., 53, p. 131.

In secondary syphilis this treatment should be continued for at least three years, and no note whatever need be taken of the Wassermann reaction, whether positive or negative, during this time. In tertiary syphilis arsenic may be used, but its effects are not so good as in the early stages of the disease, and in my experience it is inferior to bismuth given as iodo-bismuthate of quinine (Fraisse). In tertiary

FIG. 3. FIG. 4.

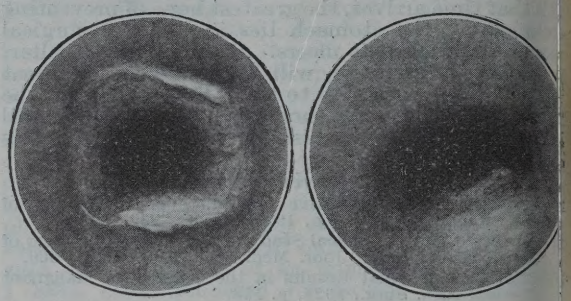


FIG. 3 (Case 1).—Two months later.
FIG. 4 (Case 1).—Eleven months later. (Since then no abnormality has been seen on œsophagoscopy.)

and congenital lesions I strongly advise continuing injections of bismuth for at least four years, with four weeks' rest after each two months' injections; alternate courses of injections may consist of bismuth for one course, mercury for the next, and so on.

Œsophageal Treatment.

Every healed and healing gumma of the œsophagus is accompanied by fibrosis and contraction; therefore the œsophagus must be subjected to frequent dilatations during the early months of the treatment, but later this need only be done at rare intervals, in order to be quite sure that no further active contraction is taking place. In the first instance it should be done under direct vision and, if no contra-indication such as excessive dilatation or diverticulum is present, may subsequently be performed blindly.

FIG. 6.

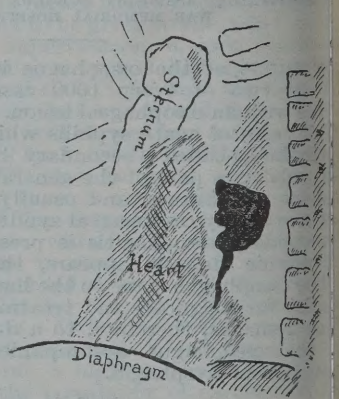


FIG. 6 (Case 2).—Diagram of radiogram of same case as Fig. 5 taken one hour later.

Report of Two Cases of Syphilis of the Œsophagus.

CASE 1. — Female, aged 48. First attended at the Cancer Hospital, London, on June 30th, 1925, under Mr. Percival Cole, who kindly allowed me to undertake her investigation and treatment. This patient first noticed difficulty in swallowing in December, 192 when she began to get occasional attacks of choki after taking solid food, and sometimes brought food that had been swallowed. The symptoms becam progressively worse until September, 1924, when s could only swallow liquid. She said she had be admitted to another hospital where the stricture w dilated. At that time the Wassermann reaction of h blood was positive, and she was given a course of N.A. (novarsenobenzol) injections, after which the Wasserma was negative. She was then free of symptoms until t months before I saw her at the Cancer Hospital, duri which time the dysphagia became progressively worse. admission she could only take very soft solids. Solid fo appeared to stop at the lower part of the neck. There w no history of any previous illness or accident of any kin She had one child, aged 19 years, and no miscarriages.

Physical Examination.—The patient was thin, but n cachectic. She said she had lost a little weight. Colo

l. Complete artificial dentures. Both epitrochlear ds were enlarged, but otherwise there were no clinical s of any abnormality.

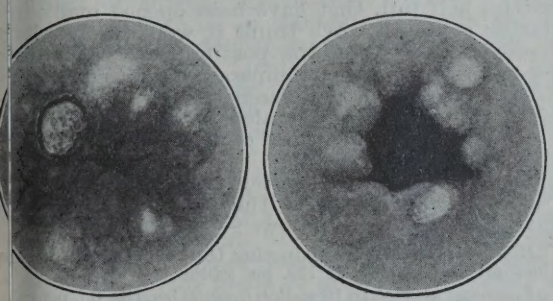
adioscopy, July 2nd, 1925.—Patient could only swallow aspoonful or two of thin bismuth emulsion, which passed slowly from the pharynx into the œsophagus. No other rmality was detected.

sophagoscopy was performed on July 3rd. Immediately nd of the œsophagoscope had passed the cricopharyngeal ncter a dense white fibrous stricture was seen, almost pletely obliterating the lumen of the œsophagus. A patch of leukoplakia was present on the right posterior of the œsophagus at the level of the stricture. A bougie passed and the fibrous constriction seen to split. Three ll bougies were left in situ for one hour. Four days later patient was able to swallow easily. The appearance as by the œsophagoscope before instrumentation is shown ig. 1; as seen a week later in Fig. 2.

ougies were passed, using gradually increasing sizes, y week or two. Fig. 3 shows the condition present in ember, 1925. For the following nine months bougies passed on an average once every two months. The arance on June 7th, 1926, is shown in Fig. 4. Her syphilitic treatment has been carried out on the lines cated above, and is still being continued. A large ie was passed twice in 1927, and met with no obstruc-. The patient has had no difficulty in swallowing since 7th, 1925.

ASE 2.—Male, aged 55. First attended the Cancer pital on July 15th, 1925, and was kindly handed over

FIG. 7. FIG. 8.



7 (Case 2).—Syphilitic stenosis of the œsophagus (thoracic ion as seen by endoscopy.
8 (Case 2).—Two years later.

y care by Mr. Ernest Miles. The patient complained sphagia, which had been gradually increasing for three hs. He brought up solid foods immediately, but fluids retained unless swallowed quickly. He said he ently brought up a great deal of "phlegm." He had losing weight and was a little constipated. He had had ks of vomiting lasting for two or three days every three ur months for six years, and had been treated by his or for "indigestion." He admitted having syphilis ars previously, when he was treated with one bottle of cine only. There was no history of swallowing a sive or foreign body, or of any other serious illness.

examination he was well covered but somewhat anæmic. e was well-marked leukoplakia on the inner aspects of cheeks, with enlarged epitrochlear glands. No other rmality was detected on ordinary physical examination. Wassermann reaction was found to be positive.

ray examination with a bismuth emulsion on July 15th ed an irregular contraction of the œsophagus about inches above the diaphragm, with some dilatation e (Figs. 5 and 6).

sophagoscopy was performed on July 21st, and the arance was as shown in Fig. 7. The stenosis was 13 s from the incisor teeth, and would admit only a very l sound. The mucosa was very red and inflamed, and easily. Patches of leukoplakia were seen on the ned surface with a small area of actual ulceration, which thought to be malignant, and a portion was removed icroscopy. The stenosis was dilated, and a Symonds' left *in situ*. This was vomited two days later. Micro- c examination failed to show the presence of any gnancy, and the patient improved with occasional ation.

o months later œsophagoscopy was again performed, a second portion of the suspected growth removed for y. The appearances were so strongly suspicious of gnancy that two tubes, each of 50 mg. of radium, were *in situ* for six hours by means of an œsophageal catheter. he second microscopic examination was also negative radium was abandoned; antisyphilitic treatment, together with regular dilatation by bougies, was commenced, and the patient improved rapidly. His antisyphilitic treatment has been continued ever since. Bougies were passed at first once a week, then once a fortnight, and then monthly, for nearly two years. The œsophagoscopic appearances as seen on July 14th, 1927, are shown in Fig. 8, and a radiogram taken at the same time is shown in Fig. 9. The patient still has a bougie passed about once every three months, and has no trouble with swallowing unless he gulps very large particles.

FIG. 9.

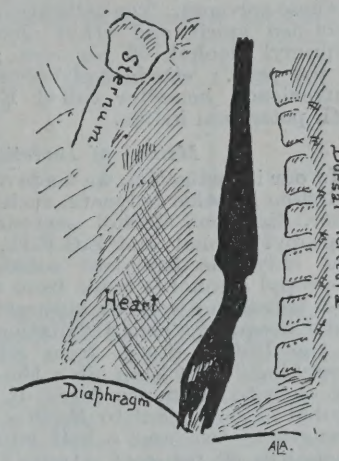


FIG. 9 (Case 2).—Diagram of radiogram of same case as Figs. 5 and 6 taken 18 months later.

The points which I wish to emphasise are: (1) Syphilis of the œsophagus is probably not so rare as a study of the literature would lead one to suspect. (2) Syphilis of the œsophagus is difficult to diagnose by vision alone, either from simple stricture or from a malignant growth. (3) One or more microscopical examinations must be made before pronouncing a case free from malignancy. (4) The patient or his relatives should not be told that he is about to die of cancer when only a specific stricture is present. Conversely, a patient with cancer of the œsophagus should not be given antisyphilitic treatment and energetic bouginage, and told that he will soon be quite normal. (5) Treatment must be by dilatation, as for any simple stricture of the œsophagus, and, in addition, very prolonged antisyphilitic treatment must be undertaken.

SKIN ANTISEPSIS WITH IODINE AND SOME NEW SOLVENTS.

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TINCTURE of iodine has long been employed for disinfecting the skin, and its uses as a skin dressing and before operation are almost universal.

Until recently rectified spirit has been the only solvent available as the chemical action of iodine on certain other solvents renders them unsuitable in every way. The extremely irritating vapours produced by the small amounts of methyl alcohol in methylated spirit make this solvent unusable. Methyl alcohol becomes oxidised by the iodine to formaldehyde and formic acid, which attack the eyes and nasal mucous membrane. It is even probable that acetic acid and other products are in course of time formed by the decomposition of ethyl alcohol with iodine, and it has been stated that old tincture of iodine has been known to burn the skin. Rectified spirit bears a very heavy duty, although the Customs and Excise grant a considerable rebate when it is used for medicinal preparations. It is on account of the heavy annual cost to hospitals that we have searched for a solvent that would replace it.

Any new solvent had to comply with the following conditions: (1) It should itself be antiseptic; (2) it should have penetrative powers when applied;

(3) it should not be harmful to the skin; (4) it should be stable; and (5) it should evaporate readily when painted on the skin.

Doubt has recently been expressed amongst surgeons as to whether iodine is an efficient antiseptic, and whether in the solution in general use the more important agent is not the spirit. It seemed advisable therefore to carry out some experiments to find out the actual bactericidal value of iodine in various solvents, as well as considering the relative merits of these solvents. The solvents used were as follows: Rectified spirit and ethyl alcohol, 70 per cent.; isopropyl alcohol, 90 per cent.; isopropyl alcohol, 70 per cent.; ethylene-glycol-mono-ethyl ether (for convenience hereafter called E.G.E.E.) and water with potassium iodide.

Method of Investigation.

In our investigation we made a number of solutions of iodine in other solvents, such as ether, petroleum ether, diacetone alcohol, sextone, sextol, as well as isopropyl alcohol and E.G.E.E., but it was decided that only the last two could possibly be used. Isopropyl alcohol is made from the gases emanating from petroleum wells by absorption in sulphuric acid and subsequent steam distillation. E.G.E.E. is made in the United States from ethylene obtained by "cracking" petroleum oils; the precise method does not seem to be known here. It is stated that ethyl alcohol is germicidal to *Bacillus coli* in 70 per cent. strength in two and a half minutes, and isopropyl alcohol in 30 per cent. strength in the same time. Iodine is said to kill *B. coli* in two and a half minutes in a strength of 1 in 50,000.[1] Ethyl alcohol is more active as a germicide in a strength of 70 per cent. than in any other concentration, being 30 times more powerful than 60 per cent., and 40 times more powerful than 80 per cent.[2] In our investigation the antiseptic properties of the solutions mentioned above were tested as follows: One series of experiments was made in vitro, using cultures of *B. coli* and staphylococci and the other directly on the skin to reproduce as nearly as possible the conditions obtaining at operation.

In vitro.—A measured quantity of each solution was added to an equal quantity of a 24-hour broth culture of each organism, and two drops of the mixture were abstracted by means of a sterile capillary pipette at the end of 1, 2, 3, 4, and 5 minutes. These were at once transferred to tubes containing approximately 3 c.cm. of broth and incubated over night. At the same time controls were put up containing two drops of culture and two drops of the antiseptic added separately. In the case of those solutions containing iodine this was neutralised by adding subsequently some sodium thiosulphate, in order to avoid any inhibition of growth of any organisms not killed by their period in contact with the antiseptic. (It was found later that the organisms grew perfectly in a medium containing two drops of iodine, although this gives a concentration of not less than 1 in 5000.)

On the Skin.—Areas of skin on the front of the forearm were selected, and marked off into segments with a grease pencil. As the majority of the antiseptics used had been found to be lethal to staphylococci and *B. coli* in one minute by the tube test, this period of time only was used. In each case an ordinary sterile throat swab was moistened in sterile broth and then rubbed hard on *part* of the selected area of skin. It was then transferred to a tube of broth and the latter incubated overnight. This served as a control to ensure that there were organisms on that particular piece of skin, before the addition of the antiseptic. The area of skin was then gently swabbed all over with the antiseptic in question. After one minute this area was again rubbed *all over* very thoroughly with a throat swab moistened in broth. The swab was again transferred to a tube of broth and this was incubated overnight. (N.B.—The amount of antiseptic carried over into the broth by this means must have been considerably less than the two drops used in the test-tube controls, and so in this case no further controls were added.)

Results of the Tests.

In the *tube test* growth was present in all the control tubes, but not in any case where one of the solutions had been in contact with the organisms, except ethyl alcohol 70 per cent. with staphylococci, where growth was present in all four tubes, and E.G.E.E. with staphylococci where growth was present in the first three tubes. In the *skin test* growth was present in all the control tubes, and also in all cases where the solvents had been used alone, without iodine. With none of the solutions containing iodine was any growth observed.

Isopropyl alcohol proved to be the most bactericidal of the solvents used, and no trace of irritation was noticed by either of us, after long periods of vigorous swabbing with this fluid. It is said to be twice as toxic as ethyl alcohol, but it is not absorbed to any appreciable extent by the skin or lung. The penetrative powers were tested along with the other solvents as follows:—

Areas of skin on the forearm, which had not been washed for six hours were sectioned off with grease pencil and were painted with the solution of iodine in the solvent in question, using a new camel-hair brush for each area. After the lapse of 30 minutes the forearm was swabbed with cotton-wool soaked in a 5 per cent. watery solution of sodium thiosulphate. The stains from iodine in 70 per cent. alcohol and 70 per cent. isopropyl alcohol were the most difficult to remove, the next being iodine in 90 per cent. alcohol, and the easiest being watery iodine, iodine in E.G.E.E., and iodine in isopropyl alcohol.

We had further to consider whether any decomposition would take place between iodine and the approved solvent. Isopropyl alcohol is $CH_3.CH.OH.CH_3$ and on oxidation yields acetone. We have failed to discover even a trace of acetone in our solutions of iodine in isopropyl alcohol, in bottles half full, that have been opened many times during a month. We think it would be advisable, however, in view of the possibility of oxidation, to recommend the use of comparatively recent solutions. Lastly, there is little difference between the evaporation rate of isopropyl alcohol and that of ethyl alcohol, the boiling point of the former being only 2–3 degrees higher than the latter.[3] Isopropyl alcohol, moreover, has quite a pleasant smell.

The relative costs of the solvents used in this investigation are as follows:—

Rectified spirit, after deducting the rebate allowed by the Customs and Excise, £2 13*s.* per gallon.

Isopropyl alcohol, in 10-gallon quantities, 13*s.* 6*d.* per gallon.

E.G.E.E., in 10-gallon quantities, 11*s.* 6*d.* per gallon.

Isopropyl alcohol 70 per cent. would be approximately 10*s.* 6*d.* per gallon, and if used generally in hospital would produce a saving of about 85 per cent.

Conclusions.

Our conclusions, therefore, are: (1) that iodine in the strength of 1·25 per cent. is in itself an efficient antiseptic; (2) that isopropyl alcohol is the most antiseptic of the solvents used in this experiment; (3) that iodine 1·25 per cent. in isopropyl alcohol is not harmful to the skin; (4) that its penetrative powers and evaporation rate are equal to those of ethyl alcohol; and (5) that its cost is very much less than that of rectified spirit. We therefore strongly recommend iodine 1·25 per cent. in 70 per cent. isopropyl alcohol as a substitute for the commonly used iodine in rectified spirit.

We wish to thank Dr. D. N. Nabarro, director of the pathological department, for permission to carry out this work, and for his kind interest and assistance.

References.—1. The Extra Pharmacopœia, Martindale and Westcott, 1925, vol. ii., p. 368. 2. Beyer, A.: Apoth. Ztg., 1912, p. 27. 3. The Extra Pharmacopœia, vol. i., and British Pharmaceutical Codex,

THE RATING OF HOSPITALS.—The County Valuation Committee for Cornwall has decided to assess hospitals at a uniform rate of 7*s.* 6*d.* per bed, but the Truro Rural Rating Committee has resolved not to demand rates from hospitals and similar institutions.

NEW HOSPITALS FOR EGYPT.—The Egyptian Government has adopted a scheme for the provision, at a cost of £1,500,000, of 100 hospitals in various towns and villages, to be completed within the next five years. The institutions will be open to all classes of the population, especially to the fellaheen, who will thus no longer be compelled to travel long distances to the nearest hospital.

Clinical and Laboratory Notes.

A NOTE ON THE SO-CALLED WHITE LINE OF ADRENAL INSUFFICIENCY.

A. MUIR CRAWFORD, M.D., F.R.F.P.S. GLASG.,
ASSISTANT PHYSICIAN, GLASGOW ROYAL INFIRMARY.

In certain individuals, if the skin is lightly stroked h the pad of the finger or the smooth rounded l of a fountain pen, a band of pallor is produced the area of skin corresponding to the part stimued. This phenomenon was closely studied by gent,[1] who regarded it as a valuable clinical t. He considered it to be pathognomonic of enal insufficiency and termed it "the white line adrenal insufficiency" (*la ligne blanche surrénale*). nsiderable interest has been shown in the reaction, tably among French clinicians, and reference to subject is to be found frequently in French rature. In this country and in America, several rkers have investigated the reactions produced cutaneous stimulation, with results which apparly show that the reaction is of no clinical value a sign of adrenal insufficiency. Thus, Cotton, de, and Lewis,[2] in an elaborate investigation on phenomena of dermatographism carried out on diers affected with "irritable heart," refer to the narkably sharp outline of a white band produced stroking the skin with the end of a flat ruler in a ceptible subject. Their observations were made h special reference to the effects of pressure of a nt point drawn firmly over the skin. This ariably demonstrated the appearance of a red he of varying intensity, with or without borders distinct pallor, and they concluded that the riations in the type of reaction could be attributed differences in the grade of pressure. In many of ir cases light pressure produced a simple white e, whereas, in other cases, light pressure was her without effect or produced a transitory red id. Wright,[3] working in the Physiological Departnt of the Middlesex Hospital Medical School, investigated the significance and value of gent's white line by applying the test to healthy jects. He carried out the test on 100 young dical students and in each case recorded the tolic and diastolic blood pressures. A positive ult was obtained in 66 per cent. of the tests, and observations led him to the conclusion that the ite line of Sergent is a phenomenon occurring in arge proportion of normal subjects, that it is not uted to adrenal insufficiency or to abnormally systolic or diastolic blood pressure, and is, in t, without pathological significance.

Personal Observations.

n order to test further the value of the phenomenon hought it might be of interest to carry out the on hospital patients of different ages and affected h different types of disease. Tests were, therefore, carried out on 100 ward patients in the Glasgow yal Infirmary. The patients were affected with usual diseases seen in a general medical ward, no selection was made of either patient or type disease. The test was carried out by lightly oking the skin of the anterior abdominal wall h the smooth rounded end of a fountain pen, due ention being paid to the details of the Sergent nique. After a few preliminary observations it decided to record the results as follows:—

Negative, where there was either no result or where stroking was followed by a red line.

Positive +, where there appeared a definite but not ked band of pallor.

Positive ++, where there appeared a very marked te band with clear-cut edges.

This method of recording the results is very similar to that employed by Wright. Although accurate time observations were not made, it was generally found that a positive reaction appeared in about 20 to 30 seconds and lasted for one to two minutes. The following tables show the results obtained. Of 100 cases examined, 49 per cent. gave a positive reaction (14 per cent. were positive ++, and 35 per cent. positive +), while 51 per cent. were negative.

TABLE I.—*Showing Results in Relation to Age and Sex.*

Age in years.	Sex.	P.++	P.+	N.
10 to 20 ..	M.	0	5	3
	F.	3	6	4
21 to 35 ..	M.	6	7	3
	F.	2	8	3
36 to 50 ..	M.	1	3	12
	F.	2	2	4
Over 50 ..	M.	0	4	16
	F.	0	0	6

P. = Positive. N. = Negative.

An examination of Table I. shows that a positive reaction was obtained far more frequently under 35 years of age than over. This is in accordance with the results obtained by other observers. Thus, Kay and Brock [4] state that the white line occurs most frequently in young adults of either sex. In my series, in 29 patients between the ages of 21 and 35 years, 79·3 per cent. gave a positive reaction, while in 50 patients between the ages of 36 and 74 years, only 24 per cent. were positive.

TABLE II.—*Showing Results in Relation to Type of Disease.*

Disease.	P.++	P.+	N.	Disease.	P.++	P.+	N.
Gastro-intestinal	1	9	14	Diabetes m. ..	1	3	2
Respiratory ..	2	7	15	Blood	0	0	4
Exophthalmic goitre	4	0	1	Renal	2	5	4
Rheumatic ..	0	2	2	Cardiac	2	4	3
				Nervous ..	2	4	3
				Miscellaneous	0	1	3

Diabetes m. = Diabetes mellitus.

The only criticism I have to offer on these results given in Table II. is that in four cases of exophthalmic goitre the reaction was obtained in a very marked degree; in fact, they showed a white band more intense than that obtained in any other disease. This tends to support the hypothesis formulated by Tracy [5] that the white line is a manifestation of sympatheticotonia.

TABLE III.—*Showing Results in Relation to Blood Pressure.*

—	P.++	P.+	N.
Average systolic pressure ..	119	117	122
Average diastolic pressure ..	69	72	73
Average pulse pressure	50	45	49

A glance at Table III. shows that no definite relationship can be demonstrated between blood pressure or pulse pressure and type of reaction.

Conclusions.

As a result of these observations and from the reports published by other investigators it would appear that (1) the white line of Sergent is a phenomenon which may be readily demonstrated in a large percentage of young adults; (2) it bears no relationship to the sex of the individual; (3) it bears no relationship to the blood pressure and is not pathognomonic of adrenal insufficiency; (4) it bears no relationship to any particular type of disease, although

sometimes it may be specially marked in certain pathological states not connected with adrenal insufficiency.

References.

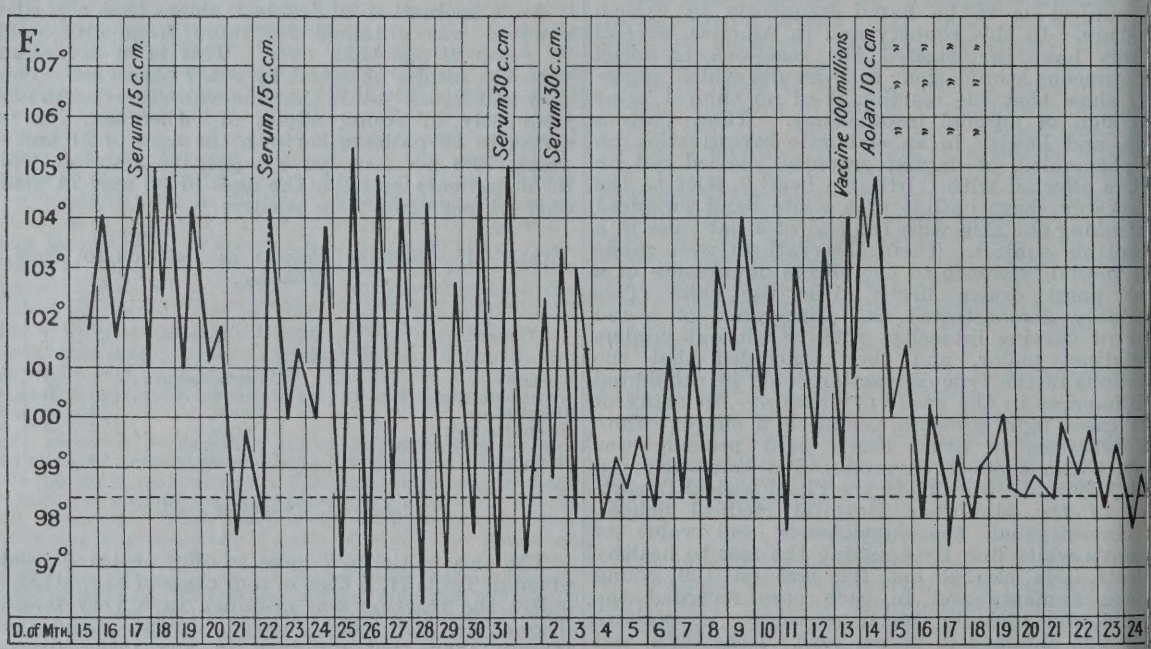
1. Sergent, Emil: Presse méd. (Paris), 1903, xi., 813; Endocrinology, 1917, i., 18.
2. Cotton, T. F., Slade, J. G., and Lewis, T.: Heart, 1917, vi., 223.
3. Wright, Samson: THE LANCET, 1922, ii., 14; Endocrinology, 1922, vi., 493.
4. Kay and Brock: Amer. Jour. Med. Sci., 1921, clxi., 555.
5. Tracy: Boston Med. and Surg. Jour., 1916, clxxv., 187.

NON-SPECIFIC PROTEIN THERAPY IN ERYSIPELAS.

BY HENRY C. SEMON, M.D. OXF., M.R.C.P. LOND.,
PHYSICIAN, DISEASES OF THE SKIN, ROYAL NORTHERN HOSPITAL.

THE respective potencies of specific as opposed to non-specific protein therapy, both of acute and chronic infections, are still sub judice, and the injection of a stock vaccine on June 13th appears to been followed by an even higher temperature, almost

The patient was very ill indeed when I was asked t her in consultation on June 14th, the thirty-first day o infection. She had a running pulse of 130, a temper of 105°, and was almost comatose. It was very dif to rouse her, and there was complete loss of control o sphincters. The erythematous rash on the scalp and was slightly œdematous in places, but had not the ty sharply defined raised edge of text-book descript Nevertheless, the rest of the picture left no doubt of the n of her infection. My first suggestion, to give an intrave injection of gr. 1/16 of perchloride of mercury, was op by one of the consultants on the ground that she had n stenosis and probably some valvular vegetations, w he believed he had seen detached by this procedu another case. No objections were raised to the intramus injection of 10 c.cm. of aolan, a germ- and toxin-free de tive of cow's milk, which is put up in 5 and 10 c.cm. amp by the firm of Beiersdorf, in Hamburg. The injection made into the buttocks, 5 c.cm. intramuscularly, and an 5 c.cm. into the fascial planes over the glutei. No har effects were observed at the time, and that same eve the temperature fell to 101°. 10 c.cm. were given o three following days, and 5 c.cm. on June 17th and The effects on the temperature are well illustrated by



Temperature chart of a case of erysipelas, showing improvement under the influence of aolan.

adherents of the former doctrine could doubtless produce examples in support of their contentions as striking as the one here submitted. The writer holds no fixed views in the controversy; his object is merely to call attention to a very harmless and sometimes exceedingly effective means of stimulating to their utmost capacity the natural protective mechanisms against disease.

A middle-aged married lady had suffered from an aural furunculosis for about three months. On May 15th last, on her return from the seaside, she appeared to have caught a chill, and on the following day at noon she went to bed with a temperature of 102° F. She complained of deafness and a feeling of fullness over the right ear and cheek. On the 17th an erysipelatous eruption appeared in those situations, and during the course of her illness in the following weeks wandered over the scalp and the rest of the face in an irregular manner. Each extension appears to have been associated with rigors and increase in the temperature.

An injection of antistreptococcal serum was given on May 17th, but there was no fall in temperature until May 21st. A second injection, given on the following day, appeared to have some effect, but doubled doses on the third and fourth days produced no result. Two attempts to grow the organisms from the blood were unsuccessful, and the chart, and the improvement in the general condition ceeded pari passu with the fall of temperature. The eru on the scalp and forehead did not appear to be influe to the same extent, but this was at no time a very str feature of the case, and gradually involuted under applications of a weak solution of ichthyol and lead.

The recovery was so striking that the case s worthy of record.

A NEW CULTURE MEDIUM.

BY C. Y. WANG, M.D., F.R.C.P. EDIN.

(From the School of Pathology, University of Hong-Kon

THE following preparation is the outcome series of experiments I have had occasion to con whilst studying certain aspects of the biolo properties of bacteria, for the purpose of raising e and abundant growth :—

Trypsinised defibrinated ox blood	10 par
,, plain bouillon	8 ,,
,, plain milk medium	4 ,,
Beaten whole egg	10 ,,

Preparation of the Medium.

ıe defibrinated blood should be fresh, but need not be ined with aseptic precautions. For trypsinisation, to 7 10 c.cm. of blood add 0·2 c.cm. of liquor pancreaticus ger's). The treated blood is left overnight (18–24 hours) ° C., but should be occasionally shaken during the first hours of incubation. The bouillon is the ordinary one broth made with meat extract and adjusted to the l reaction. Trypsinisation is effected by adding c.cm. of liquor pancreaticus to every 8 c.cm. of broth, ng to stand overnight at body temperature. Strict ic precautions are to be observed in this procedure, e end of which the broth should remain clear. The milk um is similarly prepared and should show practically hange in reaction. After being trypsinised the three s are well mixed with the beaten egg, and the whole ure is strained through gauze or muslin and distributed bes. These are sloped in an inspissator, so heated as to 3½–4 hours to reach 75° C., at which temperature they in for 15–30 minutes before being autoclaved at C. for 20 minutes.

Growth of Various Organisms.

n this medium the growth of the tubercle bacillus apid at body heat. In subculture the minute nies, somewhat raised above the surface and nly visible to the naked eye, soon become con- ıt and nodular in appearance. Examined micro- ically the organisms present marked pleo- phism, some appearing as beaded bodies 15–20 μ ength, a few of them so disposed as to give the earance of a chain of streptococci. Here and e, at one or both ends of the organism, detached ls appear as minute cocci. Other organisms are as irregularly disposed rounded bodies, as small *B. melitensis*.

he pneumococcus grows very rapidly on the ium. When sown from a loopful of a thin emul- , scarcely turbid to the naked eye, it yields in 16 hours an abundant growth of colonies which in 36 hours become flattened out, appearing as sy patches. The organism tends to retain its ility for many weeks, if evaporation is prevented. growth far surpasses that obtained on other ia, such as blood-agar or solidified serum.

he streptococcus thrives extremely well. Unlike e of the pneumococcus, the colonies do not tend atten out.

he diphtheria bacillus develops readily; at 24 hours after incubation the colonies are more ierous than those seen on Löffler's serum.

he medium has also been found favourable for growth of other bacteria, such as the meningo- us, hæmophilic bacilli, and the organisms of ders and plague.

OYAL NATIONAL ORTHOPÆDIC HOSPITAL.—The al report states that the new buildings at the country ch at Brockley Hill, Stanmore, are now occupied and ide 90 additional beds, with an operating theatre other accommodation. There are now 214 beds at more, and the King's Fund has promised a further 0 towards the provision of another 50 beds there. additional 70 acres of land have been purchased h will not only provide for future extensions, but ensure the maintenance of the rural character of ospital.

LORENCE NIGHTINGALE FUND.—The annual report ıe Florence Nightingale Fund School at St. Thomas's ital states that last year there were 156 probationer s under training. Of these, 70 were taken on extra nurses to complete their training, 37 com- d their term and received certificates, and only resigned or were discharged as unsuitable. The was raised after the Crimean war in recognition Miss Nightingale's services and has an income of 0 a year. It claims to give the best training a e can receive, and, owing to the demands upon the for important outside posts, the matron has been elled for the moment to refuse to allow further s to be made upon it.

Medical Societies.

ROYAL INSTITUTE OF PUBLIC HEALTH.

DUBLIN CONGRESS, AUGUST 14TH–20TH, 1928.

MEMBERS were received at the Mansion House by the President, General R. Mulcahy, Minister for Local Government and Public Health, President Cosgrave being among the hosts. At the inaugural meeting a further welcome was given by Mr. Seamus Murphy, the Chief Commissioner of Dublin, who was supported by the Vice-Provost of Trinity College, the President of the National University College, Dublin, and the Presidents of the Royal College of Physicians, the Royal College of Surgeons, and the Apothecaries' Hall, Ireland. General Mulcahy, in his opening address, referred to the problems in front of the Free State, remarking that they were watching with interest the results of the English inquiry into maternal mortality. He also acknowledged the generosity of the Rockefeller Foundation in aiding the establishment of efficient county public health services. General Mulcahy was presented with the Honorary Fellowship of the Institute by Sir Thomas Oliver, and the opening session terminated with greetings from many overseas delegates.

SECTION OF BACTERIOLOGY, PATHOLOGY, AND BIOCHEMISTRY.

Prof. JAMES M. BEATTIE gave a presidential address entitled Public Authorities and Research, which was printed in THE LANCET last week (pp. 430–31).

Prof. W. D. O'KELLY (University College, Dublin), who followed, while agreeing in general with Prof. Beattie, thought the problem was how to convince the local authorities that this was going to be an economic proposition.

Prof. J. W. BIGGER (Trinity College, Dublin) had something to say in favour of institute research, for the individual was able to consult at any stage with experts in other lines. Further, he himself favoured pure research and did not think Dr. Beattie distinguished sufficiently between research and investigation. It would be difficult in Ireland, he thought, to persuade the local authorities to spend money on research. Dr. Bigger went on to read a paper entitled the Expectation of Life and the Bacteriological Laboratory (which also led up to the question of the endowment of research). He compared the deaths in Ireland from 20 groups of diseases in 1875 and 1925 respectively. He showed that in 15 groups there had been a fall in the death-rate and in 5 a rise. In 13 of the 15 cases the falls were in bacteriological diseases, whereas in only 1 of the 5 "rises" was the disease a bacterial one. Bacteriology had saved very many lives and would in time save very many more. In Ireland, however, the public health authorities had not even applied the incomplete knowledge which we possessed at present. Ireland lagged behind in the provision of laboratory facilities for diagnosis and for the detection of carriers, and had made no use of recent advances in diphtheria and scarlet fever.

Dr. NORAH H. SCHUSTER (pathologist, Royal Chest Hospital, London) read a paper on primary carcinoma of the lung. She produced evidence that there was a real increase in this disease in London and stated that a similar increase had occurred in various foreign cities.—Dr. BEATTIE pointed out that in a large experience he had never seen this disease associated with the pneumoconioses of the Sheffield grinder.—Prof. W. BOXWELL (Dublin) stated that primary carcinoma of the lung was very rare in Dublin.—Prof. J. T. WIGHAM (Dublin) suggested that an investigation as to why this disease was rare in one place and increasingly prevalent in another might lead to interesting results.

In another paper Dr. BIGGER dealt with the bacteriological control of shell-fish, describing a method adopted by him for determining the fitness of shell-fish for human consumption, which was essentially a modification of Klein's. He referred to the discordance between the results obtained by him acting for the Department of Fisheries and those obtained by Prof. J. W. Eyre for the Fishmongers' Company. He believed that the divergent results were chiefly due to chance in the selection of shell-fish and chance in the selection of the particular fraction of shell-fish fluid examined. He thought his own method gave more reliable and just as rapid results as the Houston-Eyre method.—The desirability of the adoption of a uniform standard was brought out by the discussion.

Dr. GEOFFREY BEWLEY (Adelaide Hospital, Dublin), in a paper on the Schick test, showed that the mortality from diphtheria had always been smaller in Ireland than in England and Scotland. The rates in England and Scotland, however, had recently been greatly reduced, whilst that in the Free State had been practically stationary. The number of Schick reactors was probably proportionately greater in the Free State than in England. In the Adelaide Hospital 54 per cent. of the nurses were positive, as compared with an average figure of 25 per cent. for English hospitals. From this he inferred that the soil was prepared, and that diphtheria might at any time assume epidemic proportions in the Free State. The prophylactic inoculation of the children was, therefore, worthy of consideration.

Prof. BLAIR BELL (Liverpool) claimed that the clinical results of combination of the lead and X ray therapy for cancer is better than those obtained from either alone. He reviewed their 1925 statistics in the light of subsequent history. Of 31 cases which were believed to be cured 3 had since died, 2 from intercurrent disease, and 1 from recurrence. The remainder were alive and healthy.—Dr. LESLIE CUNNINGHAM described the toxic effects of intravenous lead and emphasised the need for careful study of the variation in functions of the liver during the treatment.

SECTION OF CHILD WELFARE.

Prof. A. LOUISE MCILROY (London), in her presidential address on the Progress of Midwifery in the Present Century, referred to Dublin as the Mecca of obstetrics. Bedside teaching in the three great hospitals was given by experts. There had been much advance in antenatal work between 1900 and 1925. Obstetrics, once the Cinderella of medicine, raised to a science, would promote the dignity of motherhood and the saving of child life. She referred gratefully to the pioneer work of Ballantyne, of Edinburgh, and proceeded to deal with changes wrought by antenatal supervision. Disease in expectant mothers was now treated as disease complicated by pregnancy rather than pregnancy complicated by disease. Wonderful results had accrued from the work of a special heart clinic for pregnant women at the Royal Free Hospital. Rational treatment had been introduced for eclampsia to take the place of induction of labour and high forceps cases with their great mortality. To this change Dr. Hastings Tweedie, of Dublin, had contributed much. Research had been promoted as to the normal and the abnormal. Decayed teeth might give rise to eclampsia and toxic symptoms, therefore the work of a dental clinic for expectant mothers was extremely important. X ray examination was invaluable for removing doubt as to pregnancy, &c., though some might question the advantage to the mother of learning a few months beforehand of the advent of triplets, against which risk insurance companies had now refused to insure. Practice was taking the place of lectures in the teaching of medical students. There should be, now, few emergencies in homes unsuitable for complicated labour. The spreading of this knowledge would help the cause of better housing and the demand for more skilled attention for mothers. Hurried lab should become a thing of the past. She had fo gas and oxygen the ideal anæsthetic for labour in reply to a question, mentioned that a port apparatus for the purpose was being worked with promise of success. Although there wa yet little improvement in sepsis mortality, s morbidity was becoming less. For sepsis she glycerine drainage with vaccines and open-air t ment. Hopeful research as to vaccines was in pro based on the Dick tests. She believed in se rather than autogenous vaccine. Since the drai of the uterus by glycerine had been introdu the douching of the uterus and vagina had discarded, but in certain cases intestinal lavage good. The treatment of venereal disease in p nancy prevented the birth of syphilitic babies gonorrhœal ophthalmia. Through postnatal cl and preventive midwifery they would ultima have more maternity and fewer gynæcological t as 50 per cent. of the gynæcological beds wer present filled by conditions due to bad or meddles midwifery. The sacrifice of the child by induc of labour was very seldom necessary. Hyperem and retroversion of the gravid uterus ought not t as formerly, common causes of abortion. In seven a half years in the Royal Free Hospital they had no case of craniotomy, owing to improved Cæsa technique or antenatal work. Subsequent no labour might occur after Cæsarean section with scar still holding. The same antenatal care good for both mother and child. Considering aims, obstetrics was the greatest subject in medi and the new teaching must be spread to the Connen mothers.

The claims made by Dr. McIlroy for antenatal t ment received ample confirmation in later paper Dr. LOUIS CASSIDY (Master, Coombe Hospital) poi out that 30 per cent. of pregnant women ne much care throughout pregnancy. Early abor was preventable. In seven years at the Coo they had only had two deaths from pernic vomiting and both these cases were moribund admission. By early treatment with rest in bed a suitable vitamin-rich diet much could be d to avert fœtal death and trouble from kidney dise Contraction of the pelvis was becoming rarer. In prevention of autogenous sepsis attention to se teeth, the nasopharynx, and the bladder important. There should be no vaginal examina in normal cases. For the education of the med student three months' residence in a mater hospital should be required. Obstetricians sh make a more determined effort to secure repre tation on the General Medical Council. Preven midwifery would abolish craniotomies and n Cæsarean sections comparatively rare. Women n be persuaded to go early to the antenatal clinic

Dr. N. FALKINER mentioned that at the Rotu breech presentations were only rectified if this c be done easily by external versions. They had living babies in all their last breech deliveri Dr. A. W. SPAIN (National Maternity Hospital) sidered that there were good antenatal facilities the poor and, he believed, the rich also availed th selves of antenatal advice, but the middle class not. They must educate the public through medical officers of health.—Dr. BETHEL SOLOM (Rotunda) thought that antenatal clinics should be held at maternity hospitals. Every woman sh have antenatal care and the private practition fee should include this. He criticised severely rule of the Central Midwives Board making vag examinations by midwives compulsory. The rec cation of breech presentations might result in death of the baby by the twisting of the cord give rise to the separation of the placenta. believed that the results obtained in the mater hospitals of Scandinavia and Dublin were the in the world.—Dr. G. W. FITZGERALD (Manches advocated that part of the improved training

medical student should be post-graduate. He hasised the fact that the theory of autogenous tion was a dangerous doctrine. Other points e were that antenatal clinics, if not always held naternity hospitals, should at any rate be con- ed by experts, and that, if possible, the confine- ts should be conducted by those who had done antenatal examinations.

he discussion brought out the fact that two-thirds he births in Dublin were attended through the rn and extern departments of the three hospitals, a resolution was passed requesting the masters onsider the preparation of statistics on a con- rable scale which would establish the value of natal work.

School Medical Service.

r. J. A. HARBISON (Kildare), after describing aim of preventive medicine as medical "super- on from conception to corruption," went on to v what gaps needed to be filled. They wanted ery schools like the McMillan to teach habits to toddler, and they wanted health education for r scholars.—Dr. T. S. FULTON (Belfast) emphasised unhygienic condition of many of the schools. In ast they had much leeway to make up. Out 86 schools only seven were really good. They were avouring to renovate five every year at a cost bout £30,000, and expenditure on nursery schools at present starved out in Belfast, though the need them was recognised.—Both speakers deprecated ied examinations and the undue importance ibuted to statistics. The need for the education he public and of education authorities in the difference between a nursery school and the nary infants' department of an elementary school emphasised in the discussion.

r. A. DINGWALL FORDYCE described the beginning le in Liverpool in the supervision of the rheumatic ol-child by means of a hospital clinic coöperating the public medical services. Many more dential beds and convalescent homes were needed Merseyside for this work. Head-teachers should ully notified how to deal with each rheumatic l.—Dr. CATHERINE CHISHOLM (Manchester) from experience said that rheumatic febrile attacks in 1–5 age period could be discovered if sought for.—LETITIA FAIRFIELD described the scheme for matic children carried out by the coöperation of 's Hospital. They had special classes in the ysically defective" schools for such cases and ht them a suitable trade from 12 years old ards. An important point made in the dis- ion was that school medical officers, like tuber- sis officers, should be in some way attached to pitals and thus given a wider clinical field. Dr. field gave an extremely interesting account of working of the L.C.C. scheme for mentally ctive children, and in replying to a vigorous ussion she said there had been no dull and ward in the London M.D. schools during the ten years. She further said that mongols were itted to the M.D. schools, but that their education a waste of money. She wished something could lone to correct the impression that thyroid was ficial to mongols, as absolutely fallacious hopes aroused in parents. Modern opinion was dead nst sterilisation. Those for whom sterilisation justifiable also needed confinement.

OTHER SECTIONS.

me 80 contributions, a large proportion of which from representatives of the Free State, official non-official, were discussed at the five sections their various subsections.

of. P. ABERCROMBIE (Liverpool) dealt with town rural planning, and referred to the modern anti- l phenomenon of "ribbon" building. He advo- d instead the grouping of houses on side roads ight-angles to the main artery, so as to secure pact communities.—Mr. J. WEBB (President of the Royal Institute of Architects of Ireland) pressed the urgency of planning for all the towns and rural areas of Ireland.—Mr. GEORGE BECKETT (Vice-President R.I.A.I.) said his institute has been pressing the Government during the last five years for planning measures. He believed that the city commissioners were quite alive to the importance of planning but that the Government was not.—Dr. W. C. DWYER (one of the three Dublin commissioners) pointed out the urgent need for town planning in Dublin, and emphasised the disastrous effect of bad housing on education.—Mr. MANNING ROBERTSON, M.R.I.A.I., said that Ireland lagged hopelessly behind the Continent in town and regional planning, and that a comprehensive planning Act was needed. Fortunately for Ireland, he said, they had not inherited the legacy from uncontrolled industrialism that was the despair of England's housing reformers. He moved a resolution, which was accepted by the section, recommending the Government to set up a planning commission for the development of the Free State as a whole.—Mr. W. J. BYRNE (Dublin Commercial Utility Society) showed how much could be done by utility societies if the local authorities throughout the Free State would grant to them the facilities provided for under the various housing acts.—Mr. H. T. O'ROURKE (city architect) outlined the activities of the Dublin Corporation. Modern methods of dealing with the housing problem in the congested areas of old towns were so hopelessly uneconomic that he had practically reached the conclusion that free housing was as necessary as free education.—It was clear from the discussion that the spoiling of the country-side, although it had not reached so advanced a stage as in England, was quite sufficient of a menace in the Free State to provoke vigorous protests. In order to deal with this menace Mr. R. M. BUTLER (Professor of Architecture, University College, Dublin) urged that "committees of taste," composed of architects, artists, road engineers, and business men should be set up in every district.

Dr. GERALD LEIGHTON (Scottish Board of Health) advocated a great extension of the fixing of standards for foodstuffs.—Mr. J. H. NORRIS (Director of Veterinary Research) estimated that 20 per cent. of the Irish dairy cattle were tuberculous and strongly supported the recommendations of the Free State Inter-departmental Committee, which included veterinary inspection of dairy cattle, the extension of the tuberculosis order, and the grading of milk.—That the Free State will be able to profit by our experience and secure a better nomenclature for graded milks was pointed out by Mr. J. MCALLAN (Chief Veterinary Inspector, Aberdeen).—A joint contribution from Dr. E. G. GIBB-SMITH (M.O.H., Teddington) and Dr. F. HOBDAY (Principal, Royal Veterinary College) drew attention to the unsatisfactory form of bottle used for milk and to its inefficient capping. The authors also suggested the possibility of destructible containers for milk.

Dr. P. C. VARRIER-JONES, in his presidential address, referred to the failure of sanatoriums to cure tuberculosis. Sanatorium treatment only touched the fringe of the matter. The crux of the question was the provision of suitable employment under sheltered conditions with facilities for treatment when required. Village settlements, such as Papworth, fulfilled these requirements.

A TUNBRIDGE WELLS CENTENARY.—The centenary of the Tunbridge Wells General Hospital was observed during the week ended August 18th, when funds were raised towards the £100,000 needed for the building of a new hospital at Great Culverden, Mount Ephraim. In 1926 the governors agreed to mark the centenary by beginning the erection of a new building, instead of spending many thousands of pounds in extensions. The new hospital, which will have 150 beds, will combine the eye and ear hospital, now in its fiftieth year, and a considerable portion of the £100,000 needed will accrue from the sale of the two sites. Building is to be started in a few months.

Reviews and Notices of Books.

From Magic to Science.

By Charles Singer, M.D., D.Litt. Oxf., F.R.C.P. Lond. London: Ernest Benn, Ltd. 1928. Pp. 253. 25s.

These essays deal with what their author terms poetically "the scientific twilight," and have all been printed at various times during the last ten years. But as they are scattered through various publications, some of which are not easily accessible, and as they represent a continuous development of a single line of thought, Dr. Singer has been well advised to bring them together with such modifications from the original form as later publication warranted. We have thus set out what may be called the story of early accomplishment in natural philosophy, as human knowledge groped its way from myth to something of exactitude.

The first essay briefly describes science under the Roman Empire. The author shows the superficial nature of the resemblance of the Lucretian theory to modern atomic views, and gives proper credit to Pliny and Seneca as the two founts of ancient Roman learning whose written works were not lost during the dark ages. Pliny's credulity, however, in medical matters deserves the exposure which it receives. The position of Celsus is accurately described, with much interesting information on the Roman hospital system and the growth of hygienic ideas from prehistoric times. The "Dawn of Science," the subject of the second essay, receives no particular date, but Dr. Singer suggests that we may fix the end of Antiquity and the beginning of the Middle Ages for science at the end of the fourth or the beginning of the fifth century. The lowest degradation of the human intellect in Europe generally may be placed in the tenth century, after which a slow ascent can be discerned. By the thirteenth and fourteenth centuries there is considerable expansion of natural knowledge, and Dr. Singer places the limiting date of the mediaeval attitude towards nature as 1543, and gives his reasons in great detail, which should be read in connexion with an informing chronological pedigree of mediaeval science. Three hundred years earlier the first truly scientific wave which our comparatively modern world experienced marked the arrival of Roger Bacon, while it need hardly be said that Leonardo da Vinci, Paracelsus, and Vesalius are in the pedigree, the last named being contemporary with the critical year. A chapter on the Lorica of Gildas the Briton introduces a subject of medical interest which will be novel to most readers. The lorica was literally a coat of mail, but the word was used for religious spells or invocations of a protective character. The most famous of the loricæ was that attributed to St. Gildas, which is Celtic in character and of date about 600—there is doubt about the exact period. It appeals to the Trinity and to the Hosts of Heaven in 47 stanzas which form a catalogue of the various parts of the body, and lest the compiler should have omitted any part he asks that other members of the body should be held to cover the names of which he has perchance left out. As the chief interest in the Lorica of Gildas is the extraordinary vocabulary of foreign words, the origin of many of which are obscure, Dr. Singer adds very full notes on them which, as he explains, give an idea of how, at certain cultural stages, any phrase or idea that is foreign or strange can be enlisted by the magician for his purposes. An appendix to the chapter describes the six known manuscripts of the Lorica of Gildas, one of which is in the British Museum and forms mainly the text for the essay. In the last essay, which deals with some of the legends which gathered round the school of Salerno, Dr. Singer questions the suggestion that that centre of learning gave free access to women, and states how one of its alleged female celebrities, Trotula, was other than a man—one Trottus—and that Tr passed long ago into the fairy tales as Dame Thus fades into nothingness, he says, the first w professor whose life a learned medical hist Salvatore De Renzi, once essayed to write i Collectio Salernitana.

We have to thank Dr. Singer for a learned, am and suggestive book, and one of special intere medical men inasmuch as from our science m the examples of evolutionary knowledge are t The illustrations are an interesting feature o volume.

Some Principles of Diagnosis, Prognosis Treatment.

A Trilogy. By Robert Hutchison, F.R.C.P., Physician to the London Hos Bristol: John Wright and Sons, Ltd. 1928. P 2s. 6d.

Whenever Dr. Robert Hutchison gives an ad his audience may expect something interesting, and sound. This little book could be bought read with profit by every specialist and ge practitioner, young and old, in the land. I specialist Dr. Hutchison's broad outlook should to preserve a mental balance which is sometim danger; to the young general practitioner practical principles he lays down are invalu while the older man will chuckle as he sees Hutchison put into pithy sentences the conclu which he has himself arrived at by experience bu been unable to formulate. The book contains addresses, two of which are reprinted from w medical journals, while the third is taken the author's book on "The Elements of Me Treatment."

In his preface Dr. Hutchison says that his o is to repeat and emphasise the elementary prin of diagnosis, prognosis, and treatment, which a danger of being ignored through the rapid adv of modern medicine on the laboratory side. not that Dr. Hutchison despises modern methods he is anxious to show that medicine is and remain an art, and that our duty is not finished we have put an appropriate label on the sympt In diagnosis the author comments on the faculties which are called into play—observa knowledge, and judgment, and gives a list of "do Prognosis he characterises as the branch of med which has, perhaps, made least progress since time of Hippocrates, and he discusses most admi the vexed question of "What the patient shou told." Treatment is discussed under appro headings, and Dr. Hutchison emphasises the im ance of paying attention to the patient's likes dislikes, quoting Sydenham to the effect that " importance is to be attached to the desires feeling of the patient, provided that they are excessive or dangerous, than to doubtful and falla rules of medical art."

Childbirth.

By William George Lee, A.B., M.D. Unive of Chicago Press. 1928. Pp. 300. 15s.

The manuscript of this book was completed before the death of the author. It consists o personal views of a leading American obstetr not only on the theory and practice of obste but also on what he considers to be the ideal me of organising the maternity service of a cou Some of his ideas on organisation are excel others will receive little sympathy in this cou The following passage is hardly likely to repr current American or British opinion. "The mi still persists to-day as an evolutionary remna our midst, although, like the vermiform appe she is now of concern chiefly because of the amount of harm she originates, her essential funct

ring long since been lost." The author possesses power of explaining difficult points in the simplest guage. Only 50 pages are devoted to normal our, but the whole process could be readily under- od by an intelligent lay reader; yet few experi- ed obstetricians would fail to derive benefit from ding the account. A long and careful survey is en of the reasons for interfering with the course labour; under this heading are grouped such ious conditions as hæmorrhage, contracted pelvis, malpresentations. This is a mistake from the dent's point of view, since the characteristic ures of each of these abnormalities are not clearly out. The procedures recommended are in the n orthodox, but the author's recommendation of rine tamponade as a routine after manual removal the placenta is unusual. Dr. Lee gives a full ount of the Kjelland forceps; he considers this rument the best for general purposes.

he book will be of interest mainly to those who ady have a fair amount of experience in obstetrics.

STRO-INTESTINAL DISEASES.

Lectures delivered at the James Mackenzie Institute for Clinical Research. London: Humphrey Milford, Oxford University Press. 1928. Pp. 278. 10*s.* 6*d.*

HE collection of articles which form this volume sists of lectures delivered at the James Mackenzie titute at St. Andrews during the winter session of 7. Containing as it does the views of 11 eminent tish authorities, together with discussion of their nion by no less eminent critics, the volume is re than readable; it becomes practically a treatise many unusual problems in connexion with the nentary canal. We would call attention partiarly to the article by Dr. E. Matthew on hæmaesis, and that by Prof. D. P. D. Wilkie on gallder disease as being models of what advanced ures should be. The article by Prof. John Fraser superficial pain as an aid in the differential diagis of abdominal disease is of the thoughtful and ply informed nature which one is accustomed to ect from this authority.

he volume should receive a ready welcome from practitioners whose interest in their profession is icient to persuade them not to neglect the use of ks.

ROBIOLOGY.

Handbuch der biologischen Arbeitsmethoden. Edited by Geh. Med.-Rat. Prof. Dr. EMIL ABDERHALDEN. *Neurobiologische Studien am menschlichen Fœtus.* By M. MINKOWSKI, Zürich. *Methoden der Reflexprüfung beim Menschen.* By ARTHUR BÖHME, Bochum. Abt. V., Teil 5B, Heft 5. With illustrations. Berlin and Vienna: Urban and Schwarzenberg. 1928. Pp. 511–692. Mk.10.

rof. Minkowski deals with a hitherto relatively xplored field of neurophysiology, the material for study of which is bound to be meagre and difficult ome by. Most if not all of it has been obtained he help of colleagues, who have given him living ases procured during Cæsarean operations. The ibility of such organisms being dubious and in the ority of instances certainly brief, Prof. Minkowski found it essential to form beforehand a clear idea he exact experiments to be made and the time ts to be imposed for these, in each particular ; full details of his technique are supplied. king along these lines, he has been able to cover rprising amount of the field of antenatal neurosiology. His experiments have been directed ards investigation of the origination of movets in the fœtus; whether at the earliest stages romuscular activity is possible without interbion of the central nervous system. Reflexes and x movements of all kinds are examined, including se studied by Magnus and de Kleijn; the special senses, too, are not omitted. The electrical excitability of the fœtal musculature receives attention. Prof. Minkowski divides fœtal life somewhat schematically into "phases" described as embryonic or neuromuscular, early fœtal or spinal, middle fœtal or tegmentospinal, and late fœtal or pallido-rubrocerebello-tegmentospinal, respectively; his intention is to indicate, along the lines followed by Magnus, that at such and such an antenatal stage the fœtus is a "neuromuscular animal," a "spinal animal," and so forth. While this is doubtless correct enough in a physiological sense the discrimination is apt to lead to a rather artificial conception of neural activity. The monograph is peculiarly interesting and worth perusing by all those whose concern is with the nervous system.

Dr. Böhme's contribution is on clinical lines and deals comprehensively with reflexes in health and disease. In addition to those, both superficial and deep, with which the clinician has long been practically familiar, due attention is paid to the relatively novel reflexes and automatisms which in recent years have been elucidated by a number of workers, and which exhibit the activities of mechanisms at spinal and mesencephalic levels. The application of the researches of Magnus and de Kleijn to human pathological cases here receives full discussion and illustration. Altogether a very useful contribution to "reflexology."

RHEUMATIC DISEASES.

Being the Proceedings of a Conference on Rheumatic Diseases held at Bath on May 10th and 11th, 1928. Published by the Hot Mineral Baths Committee of the Bath City Council. Pp. 292. 5*s.*

THE proceedings at the important Conference on Rheumatic Diseases which was held at Bath under the presidency of Sir George Newman in May last were reported in these columns, several of the papers being published in full at the time or later. These proceedings have now been issued verbatim by the Hot Mineral Baths Committee of the Corporation of the City of Bath, and the volume forms a useful indication of the present state of our knowledge in regard to the incidence, causation, and treatment of many very common and obstinate pathological conditions. For convenience of reference the papers have been grouped under the headings of Social and General Aspects, Causation, and Treatment; a good index makes the record readily available for inquiry. On many important matters the papers show a diversity of opinion and consequently the need for further investigation, but along general lines the therapeutics represent the most recent work, and the book will be welcomed by medical practitioners as a help towards the elucidation of puzzling problems and a guide for routine treatment.

BOTANY.

A Practical Botany for Matriculation. By MARGARET A. SHUTTLEWORTH, Biology Mistress, Sydenham County Secondary School. London: University of London Press, Ltd. 1928. Pp. 272. 5*s.*

Miss Shuttleworth is already known as author of "The Wonders of the Human Body." Her aim has now been to supply a book, the subject matter of which will cover the matriculation syllabus in botany. It represents the minimum to be attempted in a two-years course and does not presuppose any previous course in nature study. In the experimental sections only the simplest apparatus has been described, pupils being encouraged to devise other methods of doing their practical work. The book is more than an examination manual, for it is interestingly written and excellently produced and illustrated. The author regards the relation between flowers and insects as the best basis for the study of the variety of flower forms, and the attention paid to pollination makes the manual of special interest.

HISTOLOGICAL TECHNIQUE.

A Guide for Use in a Laboratory Course in Histology. By B. F. KINGSBURY, Ph.D., M.D., and O. A. JOHANNSEN, Ph.D., Cornell University, Ithaca, N.Y. London: Chapman and Hall, Ltd.; New York: John Wiley and Sons, Inc. 1927. Pp. 142. 11*s*.

THIS book is designed as an introduction to laboratory methods and should prove of benefit to those who aspire to become laboratory assistants as well as to medical students. The authors, from their own experience, have made a conservative, and in many cases happy selection of the most applicable lines of procedure in histological investigations. Thus the inquirer is not faced with the problem of choosing from a bewildering number of alternative methods. Several notes on the difficulties commonly encountered in laboratory technique are given and a tabulated list of the causes of defects and difficulties in sectioning paraffin blocks should be of help to the beginner. Certain parts of the book may be criticised on the grounds that they are too sketchy to be of value, notably the section on the microscope and its accessories, which might well have been omitted. Figures depicting microscopes and accessories unaccompanied by descriptions are of little use.

HÆMATOLOGY OF CHILDHOOD.

Die Klinische Hämatologie des Kindesalters. By HEINRICH BAAR, Assistant at St. Anne's Hospital, Vienna; and EUGEN STRANSKY, General Assistant at the Imperial Institute for the Care of Mothers and Infants, Vienna. Leipzig and Vienna: Franz Deuticke. 1928. Pp. 481. 48*s*.

THIS work forms a useful pendant to the exhaustive monograph of A. Schittenhelm on blood diseases in general; pædiatricians and hæmatologists alike will find a great deal to interest them in these lucid pages. The hæmatology of childhood has quite legitimately been treated as a subject apart. It is regrettable that no two successive authors in this field can quite harmonise their nomenclature, but a liberal choice of synonyms is offered. An attractive feature is the full recognition of English-speaking authors in the excellent bibliography. The main sections of this work are on normal blood in childhood, the anæmias of childhood, "acute system-reactions," such as leukæmia, and the hæmorrhagic diatheses. A particularly valuable account of blood changes in infections of various types is included, and also clear discussions on the influence of faulty diet on the blood picture, and on the "anæmia pseudo-leucæmica infantum" and Banti's disease.

The book is likely to become a standard work of reference. In subsequent editions the illustrations might well be more ample, and the inferior photo-micrographs omitted.

SURGICAL ANATOMY.

By GRANT MASSIE, M.B., M.S., F.R.C.S., Senior Demonstrator of Anatomy and Surgical Tutor, Guy's Hospital Medical School. London: J. and A. Churchill. 1928. Pp. 413. 15*s*.

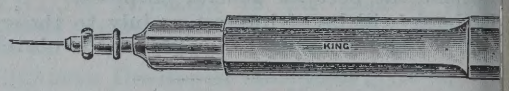
IT is difficult to break new ground in a subject like surgical anatomy; difficult, too, to keep the size of a volume within bounds and yet to include all that the ordinary student should know. There is nothing very original about this book, but the author has achieved the more important parts of his task with some success. He has given us a book easy to read and not too long, and yet sufficiently full for the needs of the student up for his finals. He states in his preface that his object has been to present anatomical facts attractively, and this also he has done. The illustrations are simple, clear, and informative, and the book should be popular.

New Inventions.

INJECTION TREATMENT OF VARICOSE VEINS.

(1) A NEW SYRINGE FOR INJECTING SCLEROSING SOLUTIONS INTO VARICOSE VEINS.

AS is well known, it is essential for a success injection that the sclerosing solution should com intimate contact with the inner coat of the vari vein in order to injure the endothelium; this in will be greater the more concentrated the inje solution. On the other hand, it is necessary to n



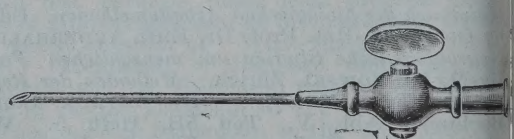
sure that the lumen of the vein has been entered, this is done by aspirating some blood; the blood drawn into the syringe is apt to reduce the concen tion of the sclerosing solution. It is therefore esse to aspirate as little blood as possible, and a syr which allows the smallest quantity of blood t clearly detected is indicated. I have used suc syringe for the last six months with most gratif results. The essential part of it is the long fine n made of polished glass, magnifying the extremely lumen. An infinitely small amount of blood is rea observed, which could not cause any dilution of sclerosing liquid; a fine short bevelled needle is with the syringe.

Messrs. Charles King, 34, Devonshire-street, Lon are the manufacturers.

Harley-street, W. A. A. MILLE

(2) NEEDLE FOR THE INJECTION TREATMENT OF VARICOSE VEINS.

THE needle here illustrated allows the syringe t detached without causing undesirable effects w the patient is changing from the standing to supine position, the prevention of loss of blood of air entering the vein. Through the body of



needle head there is a hole into which a loosely fit stop-cock is fitted. The stop-cock is "open" when cross-bar is in line with the long axis of the nee The stop-cock is fitted with a No. 17 needle, one inc length. In use, the needle, attached to the syring inserted into the vein while the patient is stand The syringe is then detached allowing blood to from the needle and then the tap is closed by a qua turn of the cross-bar. The patient then lies down the needle will remain undisturbed in the vein. limb is somewhat elevated and the nozzle of syringe lightly approximated to the head of needle, the cavity of which is gently filled the fluid to be injected, so as to expel the air f it; the syringe is then firmly attached, the tap ope and the injection made.

The needle is manufactured by Messrs. Allen Hanburys, Ltd., Wigmore-street, London.

H. ARTHUR MURRAY, M.B., Ch.B. Edin
M.O., Colonial Medical Service (Basutoland).

THE LANCET.

NDON: SATURDAY, SEPTEMBER 1, 1928.

OCULATION AGAINST ENTERIC FEVERS.

HE paratyphoid outbreaks have put many blems before practitioners in the affected districts. ong the more important of these are the recognition the disease in those who are unwell, and the sibility of preventing infection of the healthy abitants. Certain diagnosis of the enteric fevers doubtful cases owes more to the laboratory than s that of any other group of diseases, since at erent stages of the disease either agglutination s or microscopic examination of blood, urine, l fæces can be relied on to reveal infection. It is refore appropriate that the first of our new series articles on the Clinical Interpretation of Aids to gnosis should deal with the topical subject of agglu- ation tests in enteric fevers, and we draw special ention to the detailed advice offered by Dr. A. B. SHER as to the best methods of collection and patch of specimens of blood. The diagnosis ng established, the house-mates of the patient more than likely to demand advice as to means protection since they have realised how extremely omfortable an attack of paratyphoid fever may

It is, therefore, worth while to consider the age and nature of the vaccine which may be ployed for protective purposes.

The success of anti-typhoid-paratyphoid (T.A.B.) cine during the late war is familiar to everyone, l this preparation has been accepted as a con- ient means of safeguarding persons likely to be osed to the enteric group of diseases. The army cine was made up to a strength of 1000 million ed organisms per cubic centimetre—comprising million typhoid bacilli, 250 million paratyphoid and 250 million paratyphoid B. Half a cubic timetre (or 500 million organisms in all) was given the first dose, after which 10 days were allowed elapse before giving the second dose of 1 c.cm. 00 million mixed organisms). These quantities loubtedly produced a high degree of immunity, l there is certainly no reason for exceeding them civil practice, as is sometimes recommended. On contrary, it should be remembered that these doses of 500 and 1000 mixed organisms were ended for healthy men in excellent physical dition. They are probably too great for the rage male civilian and undoubtedly excessive for men. In prophylaxis by vaccines the ideal is a dual rise of immunity unaccompanied by un- asant "reactions." Military life makes a long ies of injections inconvenient, because this would an keeping the troops under observation for a siderable time; the number of doses is, therefore, reduced to two. Similarly, there may be reasons in civil life why the resistance should be raised immediately rather than at leisure—e.g., the presence of an epidemic—but it is wrong to suppose that two large doses producing two strong reactions at a week or ten days' interval is the only means of securing immunity. When there is plenty of time before exposure to infection there is no reason why a feverish reaction should not be avoided altogether by starting with quite small doses—even as little as 10 millions at first—and gradually building up the patient's powers of resistance. The immunity thus induced would probably be stronger than that obtained from two large injections. No vaccines are calculated to save a person who incurs successive infection by large quantities of virulent organisms; to ask this is to ask too much. If enormous doses of enteric bacilli are taken, as sometimes happens, for example, among mental patients of unclean habits, even recent immunisation might not actually stave off the disease, though it would probably prevent its being fatal. The usual aim of prophylaxis is to arm us against small accidental contaminations of food, and it need be effective no longer than there is danger of these occurrences. Immunity is a purely relative term, but, judging by agglutination tests, that conferred by paratyphoid A vaccine in ordinary dosage tends to disappear after about a year; typhoid immunity may possibly last three years, whilst paratyphoid B occupies an intermediate position. In civil life relatively small amounts of vaccine—e.g., three doses of 100 millions, 200 millions, and 500 millions respectively might be tried with advantage. Probably these are somewhere near the minimal quantities for securing rapid immunity to moderate infection in a male adult. If immediate protection by a single dose is wanted 500 million T.A.B. organisms should prove sufficient for practical purposes, and half this amount can give a considerable reaction. Inoculation is believed to be followed by a "negative phase" in which the subject's resistance is somewhat lowered, and this might be regarded as endangering individuals who are given typhoid vaccine whilst exposed to infection. It is hard to say when this phase begins and ends, but its significance has probably been much exaggerated. It is said to come on shortly after the organisms have been administered and to cease as the febrile symptoms abate. The negative phase affords no good reason for abstaining from inoculation. Nor are there many other reasons provided that the dosage chosen is not too large. In estimating the quantities to be given to children a calculation may be made on the basis of body-weight, though this does not hold good for very small children; when in doubt it is better to give less rather than more than the calculated amount. Apart from this it is enough to say that alcoholics react rather strongly; that renal disease requires especial caution; and that care and judgment are naturally needed where patients are enfeebled by disease or any other cause.

At the beginning of the late war it was found that soldiers inoculated with pure typhoid vaccine readily contracted the paratyphoid fevers. This shows that the killed typhoid organism confers a specific immunity, being powerless to protect the patient against others of the enteric tribe; so the typhoid element in T.A.B. does not appreciably reinforce the action of the A and B elements. As paratyphoid A is almost unknown in this country, and typhoid is not a serious risk in most localities, it would be sufficient in face of a paratyphoid B outbreak to give a pure *paratyphosus* B vaccine. The total number

of organisms given can thus be greatly reduced and the reaction—sometimes far from negligible—should also be diminished, though not perhaps in arithmetical proportion. To give the full anti-typhoid-paratyphoid vaccine for fear of a paratyphoid epidemic is like insuring against accidents by all means of transport when about to travel by aeroplane. Large doses of T.A.B., as now given with some freedom, are not likely to make inoculation popular, and it seems worth while to point out that they are seldom necessary.

THE LEGAL LIABILITY OF HOSPITALS.

IF a patient has some grave cause of complaint over the treatment he has received in hospital, it must surprise him to find how difficult it is to make the hospital liable in law for the actions of its expert staff. He may never have heard of the legal maxim *respondeat superior*, but he will know of frequent cases where an employer has been made to answer in damages for an employee's wrongful acts towards third parties. He will probably think of hospital and doctor as master and servant, for he will have an idea that the hospital exercises control over its expert staff by paying their salaries and by wielding the power of appointment and dismissal. But he will be wrong. These may be elements of the relationship between master and servant but—as Captain J. E. STONE makes clear in the careful analysis of the legal position which is concluded in our columns this week—these elements are not enough. The physician or surgeon on the staff of a hospital is nobody's servant. The hospital does not interfere with the prescriptions of the one or the operations of the other. The hospital's duty is to select a competent staff; it does not insure that the experts so selected will use that degree of care and skill which persons competent in that sphere may be expected to use. This limitation upon the doctrine of *respondeat superior* is by no means confined to the medical profession, but it happens to have been affirmed in three cases in which medical treatment was in question.

In the first of these (Hall *v.* Lees, 1904) a plaintiff complained that she had been injured by the negligence of a nurse provided by the defendants who were an association existing to supply duly qualified nurses. It was held that the association only undertook to supply a competent nurse for the patient, not to nurse the patient; the nurses had to follow the directions of the patient's doctor and the association was not responsible if a nurse failed to exercise due care and skill. Two years later, in Evans *v.* Liverpool Corporation, a jury found that the plaintiff's son had been discharged too soon from an infectious diseases hospital provided by the defendant corporation. He was sent home before he was completely recovered from scarlet fever, and consequently his brother and sisters were infected. Mr. Justice WALTON held the defendants not liable. "They do not undertake the duties of medical men or to give medical advice, but they do undertake that the patients in their hospitals shall have competent medical advice and assistance." The doctor in charge was admittedly competent and so no blame attached to the corporation for employing him. Finally, in Hillyer *v.* St. Bartholomew's Hospital the Court of Appeal put the matter beyond doubt in 1909. A patient somehow received burns while under an anæsthetic on the operating table; he sued the hospital but his claim failed. Lord Justice FARWELL said it was impossible to contend that the surgeon or the acting assistant surgeon, or the house surgeon, or the anæsthetist were servants of the hospital in th proper sense of the word. They were all profession men employed by the hospital to exercise the profession to the best of their abilities according t their own discretion; in exercising it they were i no way under the orders of the hospital or bound t obey its directions. A similar principle applied t the nurses. "The nurses and carriers assisting at a operation cease for the time being to be the servan of the defendants (the hospital), inasmuch as the take their orders during that period from the operatin surgeon alone."

As Captain STONE is careful to point out, Lor Justice KENNEDY, while concurring in the court decision, added a qualification. "It may well be, he remarked, "that the hospital authority is legall responsible to the patients for the due performanc by their servants within the hospital of their purel ministerial or administrative duties, such as, fo example, attendances of nurses in the wards, sum moning of medical aid in emergency, the supply o proper food, and the like." Hospitals, therefore, appears, must distinguish between the matters o professional skill in which the hospital board will no interfere with physician, surgeon, or nurse, and th "purely ministerial or administrative duties" whic the board is responsible for regulating. Presumabl it would be for the jury to apply the distinction t the facts of a particular case. But a jury could hardl decide without giving due weight to the evidence o the medical profession on what would be largely matter of professional practice. The same remar applies to those occasions where there is a questio of the relative responsibility of nurse and medica practitioner as in a recent case where a patient wa scalded by a hot-water bottle. If the profession ca achieve unanimity in its evidence regarding th particular functions delegated by physicians o surgeons to nurses, the court and the jury are no likely to take a different view.

DENGUE IN ATHENS.

AN epidemic described as dengue fever ha attacked the inhabitants of Athens and th Piræus during the last few days. The number o cases is reported to be between 160,000 and 200,00 All business is paralysed and many shops, office and factories have had to close down owing to th illness of their staffs. The leading bank, with normal staff of 180, is now carrying on with onl 20, while Government departments are quite di organised. The epidemic is now spreading to th provinces, whither Athenians have fled to avoi contagion.

Dengue fever is best known as an endemic infectio in the coastal regions of India, China, the East Indie and throughout the Pacific islands. Many wide spread epidemics have been recorded since MANSO first described the virulent outbreak in Amoy i 1872, which completely paralysed the small Europea population of the town and attacked 95 per cent. o the Chinese population. The exact method o conveyance of the disease was at that time unsu pected; but MANSON recorded with characteristi fidelity the sudden onset, the excruciating bon pains which have bestowed the synonym of "dandy or "breakbone fever" on the affection. Othe peculiar features—the double crisis of fever, th purpuric rash, and the post-febrile bradycardia—wer also noticed in the Amoy cases. To show the sudde onset of symptoms it is recorded that victims attacke

le shaving would drop a razor to the ground n a helpless hand. Since that period dengue has ırred at intervals of years in epidemic waves, nly in the early autumn months. In Europe it appeared in Southern Spain, Gibraltar, Malta, key, and, notably in 1881, in the Ægean Islands. Asia Minor serious epidemics have occurred in ʏrna, Cyprus, Beirut, Jaffa, and Jerusalem. ile normally a coastal disease, in its pandemic n dengue spreads a considerable distance beyond usual confines and may even, in Syria, ascend ıntains to a height of 5000 feet. That the disease pread solely by the agency of mosquitoes has been ɔgnised since the original observations of H. GRAHAM Beirut in 1903. At that time he suspected that carrier was the common brown mosquito *Culex ɟans*, though since then the carefully conducted eriments of CLELAND, BRADLEY, and MCDONALD, Australia, have incriminated the common "tiger quito," *Aëdes argenteus* (formerly known as *omyia fasciata*) as the sole vector. The exact ıre of the dengue virus is unknown, but the arches of CLELAND and his fellow workers e shown conclusively that the virus is attached ıgglutinated to the red blood corpuscles and can s through the pores of a Pasteur-Chamberland r. J. F. SILER has demonstrated that the blood lengue is infective to the mosquito for 18 hours ɔre the onset to the end of the third day of the ɛss. The mosquito, after imbibing dengue blood, s not become infective for 11 to 14 days, but ɛafter remains so for the rest of its life.

or the development of an epidemic the vector ɜt be present in large numbers, and this lies defective sanitation and abundant opportities, in the supply of stored water in close ɛimity to the houses, for the mosquito to breed; hort, the conditions which favour the spread of gue are similar to those conducive to yellow ɛr. At the present moment conditions in Athens must ınusually favourable to the propagation of *Aëdes nteus*. As regards potential disability during an ck dengue is serious enough, but as a rule it leaves permanent serious sequelæ in its wake, and the tality-rate is very low. Perhaps it is for this on that no specific pathological lesions, gross or roscopic, have been discovered. Unfortunately present epidemic at Athens appears to be excepal in having a high mortality-rate, the attacks ıg often fatal. Probably, however, the infection is ng only those who are the subjects of grave heart ɛidney disorders, where it acts as the immediate ɜe of death. If dengue is the sole cause it ɜt be of an unprecedented virulence. Another ɜibility is that the epidemic may be due to some ɛr infection. If it is dengue there is no prospect ıbatement until the advent of the cool weather, ch cannot be expected for another two months.

OST-VACCINAL ENCEPHALITIS.—The Small-pox Vaccination Committee of the Health Committee of League of Nations met at Geneva on August 22nd ɛr the presidency of Dr. R. Jorge, of Portugal, to consider among other questions. A report has been drawn n which the rarity of these cases is emphasised, in parison with the total number of vaccinations in any ıtry. The committee points out that children between d 13 years of age are particularly susceptible, whereas ıts and adults are hardly ever affected; this age incidence ɛsts the inadvisability of postponing primary vaccina-, which is the most powerful weapon available against l-pox, until after infancy. The appearance of encephs is not held to be associated with any particular strains ɛmph or with accidents in preparation. The committee lude, on the evidence available, that post-vaccinal phalitis is distinct from encephalitis lethargica.

Annotations.

"Ne quid nimis."

THE COPENHAGEN CONGRESS.

THE First International Congress of Oto-Rhino-Laryngology, which was held at Copenhagen at the opening of last month under the presidency of Prof. E. Schmiegelow, was fully attended. The meetings were held in the Christiansborg, the Danish Houses of Parliament, and the opening ceremony was honoured by the presence of the King of Denmark. The amount of material was so great that the Danes generously forwent the reading of their papers. There were four main subjects for discussion: (1) Septicæmia as a result of pharyngeal infection, opened by Prof. W. Uffenorde (Marburg) and G. Ferreri (Rome), the opening with excellent lantern slides showing invasion of vessels in the neck by organisms. (2) The conservative radical operation, by Prof. H. B. Neumann (Vienna), well illustrated by slides of microscopical sections to show bony changes going on in apparently healed radical operations. Mr. H. Barnett (Bath) followed, condemning the radical operation. Considerable discussion took place, but nothing really new emerged. (3) The influence of anatomical structure of the middle ear on the course of suppuration therein by Profs. F. J. Moure and G. Portmann (Bordeaux) and by Prof. K. Wittmaack (Hamburg). This is a subject on which otologists in this country have long held definite opinions, led by Mr. A. H. Cheatle. (4) Surgical diathermy for cancer of the pharynx, larynx, and œsophagus, opened by Dr. Dan McKenzie, followed by Mr. Norman Patterson (London); a strong case was made out for removal of growths by the diathermy knife instead of the cold knife. In the subsequent discussion papers were given by French and Spanish authors. The shorter papers read at the Congress dealt with practically every branch of the specialty. To mention one or two that were outstanding: Dr. A. Pohlman (St. Louis, U.S.A.) spoke on "minimal audition"; experiments on this subject had been made with an audiometer and many interesting observations emerged, notably that lengthened bone conduction is apparently not real. This property was, however, vigorously sponsored by clinical observers of the German school. It seems that the audiometer has not been given enough attention in this country. Dr. Wells Eagleton's (Newark, U.S.A.) study of sixth nerve involvement in connexion with the early diagnosis of meningitis called forth some interesting discussion. Dr. E. Huizinga and Dr. C. E. Benjamins (Groningen) brought forward some interesting work on ablation of parts of the internal ear in pigeons; they found that destruction of the lower part, including the saccule, produces no demonstrable effect on the movements of the birds; while ablation of the superior part containing the utricle and three ampullæ has the same result as complete destruction of the labyrinth. Mr. V. E. Negus (London) put forward in his paper the ingenious suggestion that the function of the cricopharyngeus sphincter was to prevent air passing into the œsophagus during inspiration. In addition to the scientific work there was much entertainment offered by the President, the Committee, and the civic authorities, and Dr. N. Rh. Blegvad deserves a special word of mention for his all-embracing labour as general secretary.

PINEAPPLE JUICE.

CHILDREN have always preferred the raw pineapple, when obtainable and however crude, to the uniform and refined product in sealed tins; and their choice is wise, for, as the *Journal* of the American Association has reminded us again, fresh pineapple juice contains an active proteolytic enzyme known as

bromelin, which is destroyed when the juice is heated or the fruit is canned. No doubt both clauses are true when canning implies heat; but our own chemist pointed out a quarter of a century ago that, while the peculiar digestive agent of pineapple is destroyed by cooking, there is no reason why tinned fruit should not retain its digestive power, provided that the pineapple is not preserved by heat. Bromelin, as we then showed, would digest as much as 1000 times its weight of protein, whether of meat or eggs, within a few hours, and there is an abundant supply of the enzyme in the pineapple for the average sized pine will yield nearly two pints of juice. Unlike pepsin, the digestive principle of the pine appears to operate equally well in an acid, neutral or alkaline medium. There would therefore be more justification for eating pineapple and beefsteak together than there is in eating red currant jelly with roast mutton, although we may reasonably assume in the latter case that it was because an enzyme accompanied the pleasant taste that this culinary constellation arose and retained its sway. Bromelin must not, of course, be confused with bromalin, a combination of hexamine and ethyl bromide which has had some vogue in neurasthenia and epilepsy. It is curious that Remington's Practice of Pharmacy, which is such a complete collection of drug lore in America, contains no mention of this pineapple enzyme, although it is mentioned in Tibbles's Foods and is well recognised so far afield as in Mayerhofer and Pirquet's Lexikon, and in Nadkarni's Indian Materia Medica.

THE LATE INFECTIVITY OF SCARLET FEVER.

IT used to be thought that after about six weeks, and the completion of desquamation, the scarlet fever patient was free from infection. Later it came to be noted that after the discharge of scarlet fever patients from hospital a fresh infection occasionally arose in the home. For example, in 1894 Dr. A. K. Chalmers reported that among 2593 patients discharged from the infectious hospitals in Glasgow fresh cases appeared in 70 of the houses to which they were sent. An investigation set up by the Metropolitan Asylums Board culminated in a lengthy and valuable report [1] by the late Dr. A. G. R. Cameron in 1904. In this report he emphasised—what was already known to many—that it was the convalescent with unhealthy mucous membranes who was more likely to be infectious and that there was no evidence of infection arising from late desquamation. Of late years there has arisen a tendency to curtail the detention period of this disease. In his report [2] to the Ministry of Health Dr. Allan C. Parsons gives information concerning the minimum period of detention of uncomplicated cases in 46 hospitals. The authorities of 15 of these required 42 days detention as the minimum, one 40 days, three 35 to 42 days, six 35 days, one 30 days, eighteen 28 days, and two 21 days. Thus it will be seen that 25 observers do not differ much from the old dictum. There is little doubt that a number of sufferers from scarlet fever are free from infection at the end of four weeks and probably earlier, and if diphtheria can be taken as an analogy it is certainly so, but the difficulty is in picking out those who are free from infection from those who are not. It is admittedly unsafe to consider free from infection those who suffer from a pathological condition of the throat or of the nose, or those who may have an unhealthy condition of an ear. But it is not always easy to decide that the tonsils are quite normal, and it may be quite impossible to discover a tiny nidus of infection in the small nasal passages of a young child. It may be said that this is also so at a later stage of the disease, but it is to be remembered that the natural tendency of the human being is to rid himself of infection and therefore the risk in early discharge is greater. In detecting infection in similar cases of diphtheria careful bacteriological examination is some help, but this can hardly be said of scarlet fe for it is difficult to differentiate the streptococcus this disease from other hæmolytic streptococci. the whole, therefore, and admitting our want precise knowledge, it may be considered wise to reg scarlet fever patients who show no patholog condition of the throat, nose, or ear as possi infectious for a period of about five or six weeks a the onset of the disease. There is ample evidence t the late desquamation is not in itself infectious, a there is no definite evidence that the earlier desqua tion is capable of causing infection to others. On other hand, patients suffering from pathological cor tions of the nose or throat should not be conside free from infection until recovery from them taken place. A discharge from the ear does appear to be so fruitful of infection, and consequen some observers consider it comparatively safe discharge such cases at the end of three months. is easy, even for the experienced, to fail to obse some small unhealthy area of the mucous membra and it should always be borne in mind before declar a patient to be free from infection that a m careful examination should be made.

[1] Report on Return Cases of Scarlet Fever and Diphtheria between July, 1901, and July, 1902.

[2] Some Administrative Aspects of Scarlet Fever .1927.

ALUM IN BAKING POWDERS.

FOOD prepared by modern methods frequen contains small quantities of constituents, the preser of which is not suspected either by the consumer his physician, and which by their long-continu action may set up symptoms which are distressi to the one and puzzling to the other. Five work at the Institute of Physiology of the University Strasbourg [1] have investigated the effects of "mine leavens" or baking powders containing alum; matter which is not new, but which, having rega to the very different views held in Europe and Americ fully justified reinvestigation more especially as t Strasbourg workers, as they point out, have consider the physiology rather than the gross toxicology of t question. They say "we would like to show by precise example to what social dangers we are expos through the daily use of products which have justification from the physiological point of vie but only mean a slight economy of time to cooks a housekeepers." This way of looking at things may w be commended to those who would suffer the additi of boric acid to food.

The American tolerance of alum in baking powde which the health authorities of most Europe countries virtually forbid—even in blockaded Germa when potassium bitartrate could not be procure "hygienists" we are told, "severely opposed the selves to the production or sale of mineral leave containing alum, even as an *ersatz*"—is due to t belief that if the powder is a scientifically calculat mixture of acid calcium phosphate, alum, and bica bonate of soda, all that remains in the bread wh the reaction is finished will be sodium sulphate, ac sodium phosphate, calcium carbonate, and aluminiu phosphate. The insolubility of the last substance apparently assumed. As a matter of fact, althou the Strasbourg workers do not refer to it, W. Bigelow and C. C. Hamilton in 1894 [2] concluded th the influence of alum in flour on digestion was ov estimated, but that, notwithstanding statements to its insolubility, aluminium phosphate had retarding effect on gastric and pancreatic digesti in vitro, while two years earlier O. Hehner had sho by experiments on himself and two assistants th baking powder containing alum when taken alo caused diarrhœa and painful indigestion. Comparati experiments on mice have shown Schaeffer that bre containing aluminium phosphate gives rise to

[1] The Dangers of Certain Mineral Baking Powders Based Alum, when Used for Human Nutrition. By Georges Schaef G. Fontes, E. Le Breton, Ch. Oberling, and L Thivolle. Jour of Hygiene, August, 1928.

[2] Jour. Amer. Chem. Soc., xvi., 587–597.

cellular necrosis of the superficial epithelium of stomach and of the tops of certain intestinal villi, e lesions greatly resembling erosions found in an pathology. When dogs are fed with similar inous bread lesions are not formed in either ach or small intestine, but in the large intestine, especially in the descending colon and the sigmoid re. Further, there seems to be a specific action e aluminium ion on the ovary, as the productivity male mice is much diminished if they are fed on aluminious diet, and the offspring succumb more y to infantile disease. Anatomo-pathological ination confirms these experimental results in a ing manner. While in the case of male mice ng absorbed aluminium the testicles remain al and the spermatogenesis active, the female show characteristic lesions of the ovaries.

ie Strasbourg chemists' concluding paragraph is worth reproducing: "We hope," they write, it this summary of our researches will be sufficient ake clear the nature of the danger spoken of at beginning of this article. We see that certain es, not poisons in themselves in the usual sense of word, can provoke physiological disorders and nic lesions, the ætiology of which remains ally unnoticed, when they are absorbed daily for hs and years. Such products are most certainly nsible for many illnesses, the frequence of which ients with the alimentary conditions imposed on y modern civilisation in a manner inexplicable ehand. Our object will have been attained if ucceed in attracting the attention of physicians ygienists to certain problems, the study of which rhaps not very attractive, but the solution of n is of considerable practical interest."

MEDICAL RELATIONS OF LAFONTAINE.

E author of the celebrated "Fables" was by eans an admirer of the medical practice of his yet he associated on friendly terms with quite mber of physicians, some of whom were distin-ed in their day. On the mother's side he was nded from two royal physicians, and he had maternal uncles who practised medicine. Yet, . George Morin writes,[1] he does not seem to have ited any therapeutic instincts from his medical ars. His mother was Françoise Pidoux, whose y was well-to-do and important in Poitou for years. The great-grandfather of the poet François Pidoux, who received his diploma of or at Montpellier, and settled in Poitiers instead s native town of Châtellerault, became the doyen ie medical faculty of Poitiers, and waged war st charlatans of all sorts, of which Poitou was rs a happy hunting-ground. He also insisted on pplication of the edict of Blois which prohibited ale of medicines by druggists, except on medical ription. This was in 1541—so long has been truggle against counter prescribing! François ix was called in to treat important personages t length was appointed first physician to King y II. He died in 1600, leaving the family of ix among the most influential in all Aquitaine. second son, John, following in his footsteps, ed under his father in Poitiers and became nal physician to the Duke of Anjou, afterwards y III. of France, whom he accompanied on an ition to Poland, on which occasion he proved to the father of Cardinal Richelieu and secured vour. On the accession of Henry IV. he became is physician. Jean Pidoux was the author of rst book in French on hydrotherapy and balneo-He published, in 1587, a treatise on "La et usage des fontaines de Pougues en Nivernais cours qui peut servir aux fontaines de Spa et s de pareil goût." Not content with his rate of Poitiers he obtained 20 years later the r degree at Paris. His inaugural thesis was entitled De Febrium Curatione. He lived in influential and literary society in Paris and was employed in various important political and social affairs connected with the Court. His ambition to shine as an author of verse was not gratified, for his efforts, says Dr. Morin, are not worthy of the grandfather of the author of the fables. If Lafontaine inherited from the Pidoux no aptitude for the practice of physic, he seems at least to have received through his mother their love of good cheer and of good company and their capacity for enjoyment. He describes in a letter to his wife a visit to one of the Pidoux of Châtellerault, a kindred spirit who at the age of 80 was full of the joy of life. Dr. Morin concludes by deciding that Lafontaine was a regular Pidoux, a Pidoux full of life and spirit, imaginative, light-hearted, and frivolous.

hérédite médicale de Lafontaine, Paris Médical, 1st, 1928.

A NEW ANTHELMINTIC.

THE search for a vermicide harmless to man continues. Dr. J. Chevalier[1] brings forward the claims of two pyrethrines obtained from *Chrysanthemum cinerariaefolium*, the insecticidal pyrethrum, and isolated by fractional distillation in vacuo. They are non-crystalline, insoluble in water, but easily dissolved in organic solvents, and can readily be rendered almost inert by saponification. It has been found impossible to kill warm-blooded animals by oral ingestion or by subcutaneous injection of these substances, though intravenous injection at the rate of 2 mg. per kg. of body-weight produces clonic convulsions, and 6 mg. is fatal. On the other hand, cold-blooded animals such as fish. leeches, earthworms, and frogs die in dilutions of from 1 in 1,000,000 to 1 in 3,000,000. Classing intestinal worms as akin to cold-blooded animals,Chevalier found experimentally that *Ascaris lumbricoides* of the pig and tænias of the dog became detached and convulsive, and presently died when placed in a "dilute" solution of the drug. Experiments in the treatment of animals are reported as successful, and excellent results are said to have followed its use in human beings infected by various worms and by giardia; the drug is also being tested on the hookworm in Egypt. Detailed reports of the dosage used and of the grounds on which these conclusions have been reached will be awaited with interest, seeing that the preliminary note is silent on these essential matters.

THE LATE SEQUELÆ OF EPIDEMIC ENCEPHALITIS.

THE serious prognosis of the later manifestations of epidemic encephalitis, to which we drew attention in a leading article on June 30th, is confirmed by the studies of Dr. Lloyd H. Ziegler, published in the *Journal of the American Medical Association* of July 21st. Working from the Mayo Clinic he has followed up 752 patients who had attended the clinic for epidemic encephalitis during the period 1918 to 1927. The mortality-rate for this group was low at 13·2 per cent., but on the other hand the complete recovery-rate was only 1·3 per cent.; of the total number of patients 15·7 per cent. were able to work regularly, and 25·7 per cent. were able to do light or part-time work. Unfortunately there is little doubt that the work figures for the same group of patients will diminish in time, owing to the fact that the condition usually progresses slowly, and many of the patients in the series only had their attack within the past four years. Half of them developed chronic sequelæ immediately after the acute attack; nearly 10 per cent. recovered entirely from their acute attack, only to develop chronic sequelæ 15 (average) months later, and in one case the latent period was actually seven years. Fully a quarter of the patients exhibited a residual stage practically indistinguishable from post-influenzal debility for 14 (average) months before

[1] Bull. de l'Acad. de Méd., 1928, xcix., 446.

sequelæ emerged, and no fewer than 15 per cent. of these patients are now Parkinsonians. The mental aspect does not appear to have received the same careful attention as the neurological in this investigation, only very obvious symptoms being recorded. There seems little doubt that when the encephalitic temperament is more generally recognised it will be appreciated that the chronic invalidism of the encephalitic is due as much to mental as to physical disabilities. The lowering of emotional values, the craving for sympathy and attention with exaggeration of physical deficiencies, and the childish outlook and lack of concentration of the average encephalitic are often more important factors in the economic question of ability for self-support than are the tremors, mild rigidity, ocular symptoms, and other neurological manifestations. The futility of our present methods of treatment of this disease is brought out by Dr. Ziegler's study. All the recognised methods were tried in this series of cases, and apart from the undoubted value of scopolamine as a palliative measure in Parkinsonism no therapy can be regarded as of any appreciable value. At the Mayo Clinic sodium cacodylate is regarded as a useful tonic, and supplemented by good general care and attention to obviously active foci of infection forms the usual method of treatment. Streptococcal vaccines, autogenous or prepared from patients with similar disorders, have been extensively used at this clinic, but the results obtained were no better than with other therapeutic measures. It appears that the most hopeful sign in the realm of this disabling disease is the steady diminution in the number of fresh cases which has occurred in each succeeding year since the severe epidemic of 1924.

LOCAL MALARIA CONTROL IN BENGAL.

Birnagar or Ula, credited with being the place whence spread the disastrous malaria epidemic of 1856, is one of those half derelict towns so frequent in the upper Gangetic delta, with a population of 2300 in place of the 40,000 of 70 years ago before malaria, speaking without metaphor, laid it waste. Five years ago some inhabitants, stung by the position, formed a local public health society, whose keen honorary secretary has just issued one of his periodical reports.[1] Funds are supplied by considerable private subscriptions, by a substantial grant from the Bengal Government, and by a large gift of quinine from its director of public health. The antimalarial measures used have been the oiling of anopheline breeding-places and a wide administration of quinine. The difficulties encountered in this private enterprise have been those familiar when such campaigns have been attempted in India by Government officers. There has been some stubborn opposition to oiling, two and a half out of eight and a half miles of water edge in the small area actually covered having had to be left unprotected. These untreated tanks have bred larvæ profusely, and it is significant that while the municipal authority has contributed generously to the funds of the society, the municipal tank is not one of those which the society has been permitted to oil. Some of the observations made have a wide applicability. The washing of muddy water into tanks was followed by destruction of all larvæ, breeding recommencing immediately as it settled and cleared. While, apart from this, mosquitoes bred continuously they did not torment human beings during dry weather, but as soon as rain fell entered houses and bit, while the malaria-rate rose after the usual interval. It is believed that in dry weather the insects remained inactive in the all-embracing jungle, and that this is also the explanation of the immediate but temporary influx of mosquitoes into houses when neighbouring jungle is felled. Such clearance has been begun with sale of wood and cultivation of land, but permission for further clearance is being withheld by owners. The future is not looked forward to with hope. It is felt that the determination of the mosquito species most implicated locally in transmitting mal requires more expert knowledge than is available the spot, but it is, after all, improbable that ungrudging coöperation of the Bengal Malaria Rese Laboratory, already afforded in identifying la will not be extended to the dissection of mosqui locally collected, a subject particularly appropri It is believed, too, that the local campaign shoul merged in a wider one to be undertaken, the wi suggests, by the District Board. If certain indicat in the report are read aright it is questionable whe anything will replace adequately an enthusiastic l patriotism.

[1] Malaria Control in Birnagar, 1927. By Krishnasckhar Bose.

CHEMISTS AND BENZOL.

We owe to research in America, originated industry,[1] the disclosure that benzol possesses defi toxic properties. When its fumes are regul inhaled in a strength of 100 parts per 1,000,00 air the hæmopoietic organs are attacked, and ana follows with decrease of polymorphonuclear leucocy Industrially benzol is used as a valuable solv particularly of rubber. Fortunately less toxic solve such as toluol, xylol, or high flash naphtha, ca substituted, and it has never come into widespread in English factories. Now a useful note [2] of war is given to chemists working in laboratories, who notoriously careless about exposing themselves unnecessary risks. They are urged to confine the of benzol to testing, and to abolish it as a clean agent for which it is far too often used in profus If for any reason continued exposure is unavoida the chemist should place himself under me examination once every month or two. Chem tend to disregard the fact that the human body delicate reagent always ready to react when exp to unsatisfied compounds, of which benzol is one

[1] Greenburg, Leonard: Benzol Poisoning as an Indu Hazard. Public Health Reports, Washington. July 2nd and 23rd, 1926.

[2] Bloomfield, J. J.: Benzol Poisoning as a Possible Haza Chemical Laboratories. Public Health Report, Washin July 20th, 1928.

THE PHYSIOLOGY OF FASTING.

Many religions exhort believers to fast for the g of their souls, and most unqualified and some quali schools of medical thought advocate occasional f ing for the good of the body. There is no doubt some degree of reduction in the diet produces excel results in a great many persons, but there is n uncertainty about the mechanism by which t results are produced. Prof. P. F. Richter holds view that for lack of knowledge of the physio of hunger a valuable therapeutic weapon is b neglected. In a recent address[3] to the Berlin Soc for the Study of Internal Medicine he dealt exh tively with hunger from the clinical point of view. syndrome is, he says, primarily a defence mechan Deprived of a part of its supplies, the orga promptly adapts itself for work on a restricted int It reduces its combustion rate and institutes econ in all its departments. By lessening the pang hunger it enables itself to endure the new condit as long as possible. Fasting is, therefore, an effe means of lowering the metabolic rate at need. of the most important fields for its use is diab and research into the biochemistry of hunger w almost certainly elucidate many diabetic phenon which are as yet unexplained. What evidence t is suggests that the effect of hunger on the ne and musculature is rather to improve their condi than to do them any harm. It causes a slight fa blood pressure, but a constant level is soon reac A change from a meat to a vegetarian diet, accor to O. Müller and M. Gänsslen, quoted by Ric improved the state of the peripheral circulation; is because meat proteins cause spasm of the arter and dilatation of the capillaries, a condition whi rectified when they are removed from the diet.

[3] Deut. Med. Woch., 1928, i., 1067.

ictims of Graves's disease fasting is indicated. ime researches showed that compulsory semi- ation was beneficial to over-active thyroids, and probably this action on the thyroid which mines the drop in basal metabolism. Fasting to have no deleterious after-effects. Oxida- s apt to be somewhat unduly rapid when the is first broken, and the cells show such a capacity for absorbing protein as seems to con- t all the known laws of nitrogen metabolism. ding to Richter, fasting should benefit dis- s of carbohydrate metabolism (although the eas may suffer in diabetic patients) and spastic lers of the blood-vessels such as glomerulo- itis. In allergic conditions such as migraine, psia, epilepsy, and asthma it acts by reducing take of foreign proteins. The leakage of protein he blood stream through the intestinal mucosa ponsible for a multitude of ailments, and the tion in the membranes is thought by some rs to be due to an interference by unwise dieting the balance of flora in the bowel. A fast will restore this balance. Fasting for high blood re is, in Prof. Richter's opinion, not indicated, the pressure is not appreciably altered. Sum- up, he likens its action to the stimulation of a n protein, but gives a warning that the estima- f the patient's tolerance is a difficult matter.

AMYLOID DISEASE.

E cure of three out of 15 patients in whom the nce of amyloid disease was definitely proved is led by Prof. J. H. Waldenström in a beautifully rated monograph [1] on the formation and dis- rance of this condition.

e author is unable to tell us anything new about emical structure of amyloid. He notes that it is tein substance rich in tyrosin, and suggests that xic effects of prolonged suppuration prevent the tion of certain unknown proteolytic enzymes; e absence of these the body becomes saturated this protein substance which is deposited along sceral blood-vessels. As a result of considerable al and pathological investigation he holds that yloid occurs at all it is invariably found in the where it is evenly distributed. A further vation made is that a liver may be rich in peri- lar amyloid deposit and yet show no enlarge- because of the tendency for the amyloid is to crush the liver parenchyma. Prof. enström believes that a mixed infection is sary for the production of amyloid, but in spite eful search he could not incriminate any parti- combination of organisms. By protein satura- he produced amyloid in mice. He found that ouse in four is amyloid-immune, and believes here is a similar constant proportion of human ts amyloid-immune. The production of amy- eems to take about two years from the time of tablishment of the septic focus; and about the period is required for its eradication. Prof. enström's treatment for the causative surgical is conservative; at his hospital the patients a big sunny verandas, and are given abundance ter and cream. The diagnostic methods adopted pected amyloid disease are drastic, but leave no as to the nature of the condition. A trocar annula similar to a lumbar puncture needle, t that its calibre is 1½ mm., is thrust into the and the trocar is withdrawn. The cannula is forwards about 2 cm. and twisted slightly in g axis. A rod of liver tissue is thus cut, with- n from the cannula by a powerful little n syringe, and examined microscopically. In of the three cured cases at least three liver ures were made, and by sections of material so ned Prof. Waldenström demonstrated succes- over a period of about three years normal liver tissue, liver tissue stuffed with amyloid deposit and finally restored normal liver tissue. In THE LANCET of July 21st Dr. G. F. Walker recorded a case of amyloid disease of considerable duration which yielded to treatment, and we welcome this further evidence that a disease which was long held to be both common and fatal is now not only rare but also in certain conditions curable.

[1] Act. Chi. Scand., 1928, lxiii., 479.

STRONTIUM FOR MIGRAINE.

GOOD results from a new method of treatment of migraine are reported by Dr. Max Serog, of Breslau, in a paper [1] which has just been published. Having found, in occasional instances, an improvement after intravenous injection of a preparation of strontium, he made a systematic trial of treatment with this metal and now reports the results in 20 cases. All the patients experienced great relief; many of them suffered previously from very frequent attacks, and, after a course of strontium, were free from headaches for many weeks; some are described as being "quite free" from attacks but, unfortunately, it is not stated how long such patients were kept under observation. The preparation used by Dr. Serog was "neostrontan," made by the firm of Tosse, Hamburg. Five cubic centimetres of a 10 per cent. solution of this strontium derivative were given intravenously, followed at intervals of two days by two injections of 5 c.cm. each of a 20 per cent. solution. The injections were well tolerated; the only unpleasant symptom was a feeling of heat or flushing of the face, and this could be greatly reduced if the injection was given very slowly and, when the flushing began, temporarily stopped until it had passed off. The best results were obtained with the younger patients. It is noteworthy that in several cases it was possible to cut short an attack of migraine by giving an injection of neostrontan—even when the attack was at its height. It seems that this treatment is capable of attaining successful results, especially in cases in which the attacks are very frequent, and it may be used either in combination with other methods or where other methods have failed. But the path of the physician is strewn with discarded remedies for migraine.

[1] Medizinische Klink No. 33, August 17th, 1928, p 1279.

CURRENT VITAL STATISTICS.

ON another page we deal with some of the lessons which may be drawn from the text of the Registrar-General's Review of the year 1926. In the meantime the early appearance of Part I. (Medical Tables [2]) of the Review for 1927 has almost bridged the gap between the two years. The salient features of this review were embodied in a provisional statement,[3] which has, of course, not been substantially modified. The birth-rate of 16·6 for the year 1927 is the lowest rate recorded since the establishment of civil registration in this country, the lowest rates previously being those for 1918 (the last year of the war)—viz., 17·7 and for 1926—viz., 17·8 per 1000 population. The death-rate was 12·3 per 1000 population, slightly higher than for any year since 1922. The rise affects the two sexes almost equally, and was due to a severe epidemic of influenza in the March quarter. The death-rate in the June quarter was the lowest on record for the second quarter of the year, while the rates in the third and fourth quarters were below the average rate in the corresponding quarters of the last five years. The deaths of infants under 1 year of age were equal to 70 per 1000 births, being the same as for the previous year; thus the two years 1926 and 1927 have the lowest infant mortality-rate on record except only that for 1923—viz., 69. The mortality from the infectious diseases differed little from that for the previous year, except that the deaths from influenza numbered 22,263 and were equal to a rate

[2] H.M. Stationery Office. 15s.
[3] See THE LANCET, 1928, i., 141.

of 567 per million living. The mortality-rates recorded in earlier epidemics were as follows:—

1848 .. 459	1892 .. 533	1918 .. 3078	1922 .. 563
1891 .. 574	1900 .. 504	1919 .. 1181	

From these figures it will be seen that the mortality in 1927 was the highest recorded since the great epidemic of 1918–19, and was but 7 per million below that of 1891. The increased mortality from pulmonary tuberculosis and heart and respiratory diseases may also be in part due to the prevalence of influenza. The death-rate from cancer was 1376 per million population, or 14 per million higher than in 1926, being the highest crude death-rate yet recorded. The 4907 deaths from suicide were equal to a rate of 125 per million, which is the highest recorded rate from this cause; the rates in the three preceding years were 96, 105, and 114. The Review indicates the increasing use of lysol and coal-gas as means of self-destruction.

Prof. Robert Muir, Sir John Parsons, and Sir Charles Trevelyan have been appointed members of the Medical Research Council, succeeding Prof. G. Dreyer, Sir Archibald Garrod, and Mr. William Graham.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

(DENTAL BRANCH.)

IN the Educational Number of THE LANCET last week, when placing before our readers the advantages offered by joining this Service, we were unable to give the following current rates with regard to Dental Officers, the information not arriving in time for press.

On the completion of two years' service in the rank of Surgeon Lieutenant Commander (D), dental officers on the Active List are eligible for a three months' post-graduate course at a dental hospital and school at the public expense, and will draw full pay while attending the course.

Pay.—The current rates of full pay for Dental Officers are as follows:—

	£ £
Surgeon Lieutenant (D)	377–462
Surgeon Lieutenant Commander (D) (promoted after six years' service)	556–687
Surgeon Commander (D) (promoted by selection to fill vacancies in Establishment)	730–933
Surgeon Captain (D) (promoted by selection to fill vacancy in Establishment).. ..	1073–1329

The Regulations regarding Pension and Withdrawal Gratuities are the same as for Medical Officers in the corresponding Ranks.

HONORARY APPOINTMENTS TO THE KING.

The King has approved of the appointment of Lieut.-Colonel R. McCarrison, C.I.E., and Lieut.-Colonel W. H. Leonard to be honorary physicians to His Majesty, with the brevet rank of Colonel, in succession to Colonel C. R. Bakhle and Major-General A. A. Gibbs, retired; and the appointment of Lieut.-Colonel G. D. Franklin, C.I.E., O.B.E., to be honorary surgeon to His Majesty, with the brevet rank of Colonel, in succession to Colonel R. W. Knox, D.S.O., retired.

RESTRICTED LEAVE OWING TO SMALL-POX.

Owing to the presence of small-pox in the area, restrictions have been placed on the granting of leave at Brechin (Forfarshire) and Kingston-upon-Hull. There are now two districts scheduled in London (St. Marylebone and Wandsworth) and 53 outside.

ROYAL NAVAL MEDICAL SERVICE.

To be Surg. Lts.: J. G. Ollerenshaw, T. W. Froggatt A. N. Forsyth, C. H. Birt, A. J. Burden, D. R. F. Bertram and D. L. Pow.

Sub-Lts. to be Lts.: B. E. W. Logan, J. B. G. Tem K. H. Fraser, and H. C. Browne.

The following appts. are notified: Surg. Comdrs. C. F Sankey to *Barham*, and to *Warspite* (on transfer of fla and G. H. Hayes to *Ramillies*. Surg. Lts. J. Johnstor *Resolution*; L. P. Spero to *Dahlia*; H. J. McCann *Pembroke* for R.N. Barracks, Chatham, temp. sup V. G. Horan to *Heliotrope*; C. B. Fox to *Rodn* D. R. Campbell to *Iroquois*; I. J. Corbett to *Victory* R.N. Barracks, Portsmouth, temp.; and S. J. Savage *Pembroke* for R. N. Hospital, Chatham, temp.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt.-Comdr. W. J. Payne and Surg. Lt. R. Stubbs to *Victory*, for R.N. Hospl., Haslar, for training.

ROYAL ARMY MEDICAL CORPS.

Maj. G. S. Parkinson retires on retd. pay and is gra the rank of Lt.-Col.

Maj. J. St. A. Maughan to be Lt.-Col., vice Lt.-Col. W Croly to retd. pay.

Capt. J. Vallance, Reg. Army Res. of Off., relinquishes appt. and resumes the rank of Maj.

Capts. R. H. C. Pryn and T. L. Henderson to be Ma

Capt. B. C. W. Pasco, late R.A.M.C., to be temp. Ca and temporarily relinquishes the rank of Capt.

Lts. (on prob.) W. R. C. Spicer, J. H. Anderson, T. F Woods, S. M. Burrows, G. T. L. Archer, M. R. Bu P. J. L. Capon, D. R. W. Burbury, K. McNeill, P. Dw P. W. A. Agnew, and J. W. Kendall are confirmed in t rank.

The undermentioned Lts. from the secd. list are re to the estab.: L. R. S. MacFarlane and W. F. Lane.

To be Lts. on prob.: Lt. A. T. H. Marsden, from R.A. (T.A.); 2nd Lt. L. R. H. Keatinge, from T.A. Res. of Gen. List; Temp. Lt. G. L. Grieve, and relinquishes temp. rank of Lt.

The undermentioned Lts. on prob. are secd.: F. W N. J. Nicholson, H. W. Daukes, and D. C. MacE. Macpher

ARMY DENTAL CORPS.

Capt. A. Gibson to be Maj.

Temp. Lt. H. Quinlan, Dental Surg., Gen. List, to be

ARMY RESERVE OF OFFICERS.

Cols. J. W. Leake and F. Ashe, having attained the limit of liability to recall, cease to belong to the Res. of

Maj. J. H. Barbour, having attained the age limi liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Maj. E. T. Burke resigns his commn. and is granted rank of Lt.-Col.

Capt. J. V. Bates to be Lt.-Col. and to comd. the 1 (Home Counties) Fd. Amb., vice Lt.-Col. P. J. Gaffi vacated.

Capt. E. B. Hinde resigns his commn. and is granted rank of Maj.

2nd Lt. W. E. Hayes (late R.E.) to be Lt.

Supernumerary for service with O.T.C.: Capt. H Malcolm to be Maj.

ROYAL AIR FORCE.

Flight Lt. A. F. Cook is seconded for duty with Transjordan Frontier Force.

Flying Officer E. A. Rice is promoted to the ran Flight Lt.

Flight Lt. C. Sempill de Segundo relinquishes temporary commission on completion of service.

RESERVE OF AIR FORCE OFFICERS.

Squadron Leader E. P. Punch relinquishes his commi on completion of service.

INDIAN MEDICAL SERVICE.

Lt.-Col. T. Hunter retires.

GUY'S HOSPITAL.—The annual report upon work of Thomas Guy's foundation shows that in 1927 1 in-patients were admitted, an increase of 1000 over previous year. There were 122,446 new out-patients made 537,676 attendances; they cost 7*s.* each. in-patients cost £11 19*s.* 2*d.* each. The total income £164,000 and the expenditure £172,000; the accumu adverse balance of expenditure over income now ex £100,000, and an appeal is being made for £500,000 fo re-endowment of the hospital.

The Clinical Interpretation of Aids to Diagnosis.

eries of Special Articles contributed by Invitation.

I.

E WIDAL OR AGGLUTINATION REACTION IN THE DIAGNOSIS OF INFECTIONS UE TO ENTERIC GROUP OF MICRO-ORGANISMS.

By A. B. Rosher, M.R.C.S., D.P.H.,
RECTOR OF THE CHARING CROSS HOSPITAL INSTITUTE OF PATHOLOGY.

r order to estimate the value and limitations of agglutination reaction in the diagnosis of these ctions it is necessary to have some knowledge of modern technique employed for the test and to eciate the behaviour of agglutinins under certain litions.

Macroscopic Method.

ne macroscopic technique is nowadays almost riably used in preference to the microscopic iod. By this means the end-point of agglutination be obtained more accurately, and there is no chance ne laboratory worker being infected, since dead lli are used instead of living ones. The test is sensitive when this method is employed, and it no means uncommon to demonstrate agglutinins serum after it has been diluted 1/40,000 times. highest dilution of patient's serum still having power of agglutinating the bacilli is commonly d the "agglutinin titre." The criterion of nosis by the old-fashioned microscopic method an agglutinin titre in the neighbourhood of), whereas agglutination to this titre could not sself be regarded as diagnostic when the macro- ic technique is employed.

is customary to put the patient's serum up nst *B. typhosus*, *B. paratyphosus* A, B, and C, nteritidis Gaertner, and *B. aertrycke*. The vast rity of infections in this country are due to *phosus* and *B. paratyphosus* B.

enteritidis Gaertner and *B. aertrycke* are the nisms usually associated with food poisoning the symptoms of acute gastro-enteritis pre- nate, but on rare occasions are stated to give o febrile conditions resembling enteric in some cts.[1 2 3]

Collection of Blood.

re blood is required when the macroscopic test ployed, and this represents the only disadvantage e method. Not less than 2 or 3 c.cm. of blood are able, and whatever method of collection is oyed it is advisable that the tube or syringe which it is collected should be perfectly dry free from any chemical substance, otherwise the l is likely to become hæmolysed and useless for est.

a syringe be used and sterilised by boiling or alcohol and ether, it is essential to wash it out sterile saline before withdrawing the blood. blood is usually obtained either (1) by pricking nger or thumb with a No. 2 triangular-pointed e, a small indiarubber tourniquet having been ously applied to the base of the digit; or (2) by ing a hollow needle into the median basilic vein collecting the blood direct into a syringe or into t-tube.

wever, by using a Behring venule ample tity of blood can be obtained quite easily, and rocedure is practically painless. Special venules supplied for the diagnosis of enteric whereby l is drawn from the patient for the agglutination nd blood culture simultaneously, thereby saving atient the inconvenience of being punctured . Since the blood goes straight into the culture m the risk of contamination is eliminated.

Technique.

Briefly, the technique is as follows:—

The blood is allowed to clot and, after centrifuging, the serum is drawn off. Various dilutions—e.g., 1/10, 1/20, 1/40, &c., to 1/1280—of the serum in normal saline are made in a series of test-tubes. The dilutions are made with graduated pipettes or by using Dreyer's dropping pipettes.[4]

Seven Dreyer's agglutination tubes[4] are then placed in a rack and 0·5 c.cm. of an emulsion of dead typhoid bacilli is put in each tube. (These emulsions are made by growing the organisms in bouillon for 24 hours, after which a small quantity of formalin is added to kill them. The emulsion is then standardised to contain so many organisms per c.cm., and if kept cool and in the dark can be used for some months.) Half a cubic centimetre of the 1/10 dilution of the patient's serum is now transferred to the first agglutination tube, and the same amount of the 1/20 to the second tube, and so on with all the dilutions. We now have a series of seven tubes containing a range of dilutions from 1/20 to 1/1280 of the patient's serum mixed with typhoid emulsion; each tube contains 1 c.cm. of fluid. The patient's serum is then put up against emulsions of paratyphoid bacilli in exactly the same manner, seven tubes being devoted to each organism. The rack is then placed in a water-bath at 55° C. for two hours or so. Agglutination usually commences in 10 to 15 minutes, and can easily be observed with the naked eye against a dark background. The contents of tubes showing no agglutination appear slightly cloudy, owing to the millions of bacilli in suspension, but when agglutination has occurred they become aggregated into large clumps which fall to the bottom of the tubes, resembling a precipitate, and the supernatant fluid is quite clear. The tubes are inspected occasionally, and if any organism is agglutinated in all dilutions up to 1/1280 further dilutions are put up—e.g., 1/2560, 1/5120, 1/10,240, &c.—so that the end-point of agglutination can be established.

Occurrence of Agglutinins in the Serum of Apparently Normal People.

If we test blood from these members of the population who have not been inoculated with T.A.B. vaccine and give no history of having had enteric against this group of organisms, we find that about 4 per cent. of them agglutinate *B. typhosus*, *B. paratyphosus* B and C, and *B. enteritidis* Gaertner, whereas about 10 per cent. react with *B. aertrycke* (Mutton).[5] The reason for this agglutination is unexplained, but it is possible that the people have passed through unrecognised infections with these organisms or closely allied ones. (A point in favour of this theory is the absence of people who can agglutinate *B. paratyphosus* A, for infections with this organism are extremely rare in the British Isles.) Some of these people may be carriers, for it is well recognised that the serum of the majority of carriers contains agglutinins; not enough cases have been investigated for any definite conclusions to be formed. The majority of sera give low agglutination titres, such as 1/20, 1/40, 1/80, but occasionally one finds a serum that will agglutinate when diluted as much as 1/640 times. As far as one can ascertain, these titres remain constant and do not fluctuate over a period of weeks.

Behaviour of Agglutinins as a Result of Infection.

Agglutinins do not appear in the blood until the end of the first week of disease, and therefore it is useless to expect any immediate diagnostic information from the reaction before this. Nevertheless, it is very important to perform the test during the first few days, since a negative result is invaluable in assessing the significance of results obtained later in the disease, especially in cases which only give low agglutinin titres throughout. However, it is during the early days that the chances of isolating the causative organism from the blood, fæces, &c., are best, and therefore cultures should also be made.

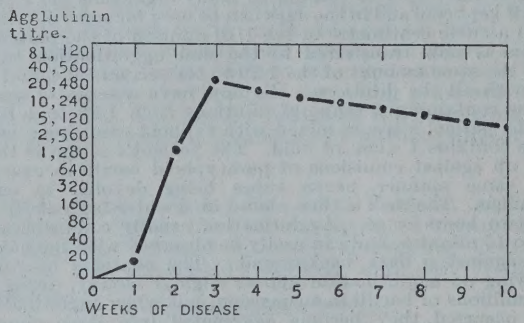
The agglutinins increase rapidly in intensity, reaching a maximum towards the end of the third week and then start to fall gradually (see Chart 1). They fade away over a period of months, but may last for years. There is a considerable variation in the amount of agglutinin production in different cases. Thus sometimes the highest agglutinin titre reached may be more than 1/40,000, whereas in other cases the maximum titre may be on the 1/100 mark. The

latter event is unusual, and this is fortunate, since in these cases a diagnosis cannot be established on a single test, and repeated tests have to be performed (see below).

Behaviour of Aggutinins Resulting from Protective Inoculation.

As a result of inoculating a person with a vaccine prepared from typhoid and paratyphoid bacilli (T.A.B.), agglutinins to these various organisms appear

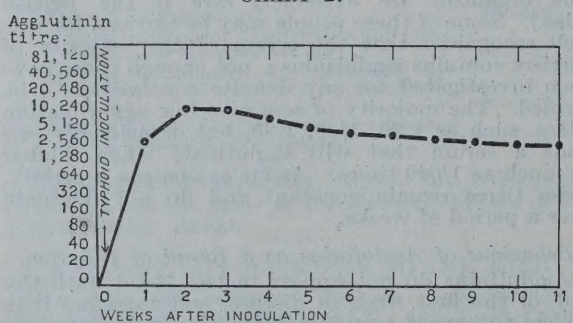
CHART 1.



Showing the behaviour of agglutinins during an infection. Note the rapid rise in the second and third weeks.

in the serum (see Chart 2). They reach their maximum after two or three weeks, and then usually fall to a level round about the 1/500 mark; here they remain for many years, and in some cases no doubt for a lifetime. The tendency is for them to get less as time goes on, but the process is so gradual that when tests are made once a week for several weeks and no change in agglutinin titre can be demonstrated. There is considerable evidence[6] to show that nothing will cause any fluctuation of the agglutinin titre at this stage unless a person becomes infected with one of the enteric group of bacilli. In the event of this happening the agglutinins for the infecting organism rapidly rise and reach a maximum towards the end of the third week. Then they gradually fall, and in all probability become stationary once again on a level somewhat higher than they were before the

CHART 2.



Showing the behaviour of agglutinins resulting from inoculation.

infection took place. Thus the behaviour of the agglutinins in a person suffering from enteric infection is the same whether the person has been inoculated or not, except that in the inoculated they start from a definite level (see Chart 3), whereas in the uninoculated they start from zero.

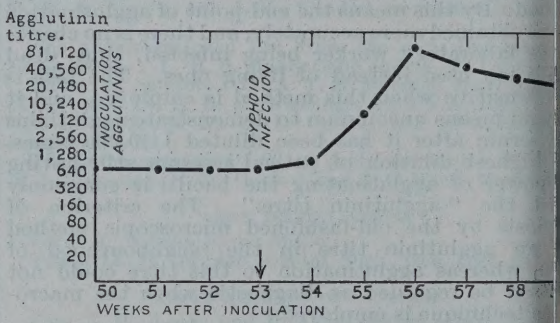
Diagnosis of Infection Agglutinins.

If we are confronted with a serum which agglutinates one or more of these organisms it should be clear from the above remarks that the agglutination may be due to: (1) "normal" agglutinins; (2) infection agglutinins; (3) inoculation agglutinins; (4) a combination of the above. It then becomes necessary to distinguish infection agglutinins from the remainder. One can usually rule out inoculation agglutinins by questioning the patient; but, apart from this, t fact that a serum agglutinates the three organisn *B. typhosus*, *B. paratyphosus* A and B, is usual sufficient indication that inoculation has taken pla

The essentials for diagnosis *in the uninoculated* mu then be considered. A titre of 1/1000 must always regarded as strongly suspicious, and if it is consid ably higher than this a presumptive diagnosis infection can be made. It must be remembere however, that occasionally titres as high as this a not registered even when the agglutination is at maximum at the end of the third week. In the cases it is necessary to perform two or even three te with an interval of three or four days between then if there is any appreciable increase or decrease titre (according to the stage of the disease) a diagno of infection is justified. The occurrence of these cas makes it of the utmost importance to test the blo in the first few days of disease, for if it is then negati and a few days later agglutinins appear, a diagno of infection is justified, even if the titre of the seco test is only on the 1/20 or 1/40 mark.

The diagnosis by means of repeated tests is fai easy during the first three weeks of disease, since t rise in agglutinins is rapid; but after this period

CHART 3.



Showing the behaviour of the agglutinins in the case of inoculated person becoming infected. This chart gives idea of what would happen to the agglutinins if a pe became infected with *B. typhosus* 53 weeks after be inoculated.

is less satisfactory, and may be a lengthy procedu for the fall in agglutinins may be very gradual.

In the inoculated a single test by itself is of v little value, and it is essential to perform, at any ra two tests with an interval of three or four da between them in order to demonstrate the fluctuat in titre characteristic of infection. As has b noted above, after inoculation agglutinins have sett down to a steady level no change can be detec in them over a short period unless the patient becor infected with organisms of the enteric group.

Value of the Test.

The agglutination reaction thus has a defi value in the diagnosis of these infections, and may even more useful in the future. The work of E. W and A. Felix[7] and others has shown that typhoid a paratyphoid bacilli contain two kinds of antig which differ in their resistance to heat and to cert chemical agents. These, for reasons which do concern us here, have come to be called the H an antigens. It has been claimed by Felix that agg tinins acting on the O antigens appear only as a re of infection, and that, by using an emulsion contain O antigens, it is possible to arrive at a diagnosis the result of a single agglutination test even in inoculated individual. Burnet[8] has recorded sim results. If these observations are widely confirm by future investigations they will clearly make important advance in the diagnostic application of test.

The great value of the agglutination test, compa with other methods of diagnosis of these infecti is the fact that agglutinins after the first week so are almost always present, and therefore sho

capable of demonstration, whereas the causative anisms can only be isolated from the blood in n 70 to 80 per cent. of cases. and from the fæces bout 50 per cent. A blood culture when positive ne most satisfactory means of diagnosis, because gives conclusive proof of infection, while the utination reaction only gives indirect proof. The ence of typhoid or paratyphoid bacilli in the fæces rine means that the patient is either a carrier or uffering from an active infection with these anisms, and it is permissible to assume an active ction if the symptoms are sufficiently suggestive. ach method of diagnosis, therefore, has its limita-s, and in order to obtain the best results it is ntial on encountering a suspected case: (1) to te cultures from the blood, fæces, urine, and um (if present); (2) to perform an agglutina- reaction; (3) to perform a leucocyte count. se three investigations should be carried out tever the stage of disease. The leucocyte count valuable because it takes very little time to perform, if a leucopenia is present one can usually rule most of the infections likely to resemble enteric cally, with the exception of influenza. The lt of the agglutination reaction should be inable in two or three hours, but isolation and tification of the causative organism may take e days.

The Diagnosis of Bacterial Food Poisoning.

ne agglutination test also has some value in the nosis of bacterial food poisoning. These infections isually due to various types of *B. aertrycke* and to *nteritidis* Gaertner. Blood cultures are of very value, and the diagnosis is usually made by ting the causative organism from the fæces. The utination reaction affords valuable support, but s to be interpreted with care, owing to the rmal" people who agglutinate these organisms; nermore, people who have been inoculated with B. frequently agglutinate *B. aertrycke* and *B. itidis* Gaertner, owing to the close serological ionship of members of this group of bacilli. owever, this non-specific or group agglutination gard *B. aertrycke* can be avoided by using type lsions, as shown by Andrewes.[9]

Conclusion.

conclusion, attention must be drawn to the rtance of supplying the bacteriologist with brief ils of the case under investigation, especially ding the duration of the disease, inoculation, so forth. Neglect to do this is, no doubt, nsible for the complaints sometimes made by titioners of incomprehensible laboratory reports. successful diagnosis of enteric can only be accom-ed by close coöperation between the clinician the laboratory worker.

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ARIE CÉLESTE SAMARITAN SOCIETY.—During the six months of the present year this society, which was lished to help patients of the London Hospital, ted 6739 persons, an increase of 402 as compared with orresponding period of last year. Surgical appliances been supplied to 2625 patients, and 1323 have been to the sea or the country.

REASURER OF RADCLIFFE INFIRMARY.—The Rev. Cronshaw, upon his appointment as Principal of St. nd Hall, has resigned the treasurership of the Radcliffe nary, which he has held for the last 18 years. During eriod the hospital, by reason of his energy and activity, en greatly improved and its usefulness widely extended. cognition of his services Mr. Cronshaw has been made e-president.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT CARDIFF.

(*Continued from p. 351.*)

SECTION OF MEDICAL SOCIOLOGY.

THE FALLING BIRTH-RATE.

Prof. W. J. ROBERTS (University College, South Wales), in opening the subject from

The Economic Aspect,

referred to the writings of Malthus, and stated that nowadays no simple and definite theory as to the law of population held the field. Official statistical data threw no light on the means by which the reduction of births was secured. Apprehensions had found expression with respect to the decline of the French population, and in the U.S.A. as to the higher birth-rate among unassimilated immigrants when compared with the pure Americans. It was also believed that in Britain birth control prevailed more widely among the relatively better situated. Sir Arthur Newsholme had dealt with the thesis that it was not a matter of indifference as to which races peopled the unfilled portions of the world and took the preponderant share in shaping the destinies of mankind. He had also referred to the fact that in the earlier years of certain industries each child was his parents' savings bank, and that now the child was a less profitable asset than in the past. Economic inquiry tended to destroy utterly the impression that the people of this island were divided by social circumstances into breeds, some of which were fitted by origin and nature to bear rule over the others. The economist wished to have many questions answered, both by the biologist and the social investigator. For example: Are the "comfortable classes" the result of biological excellence? Are the classes which exhibit aptitude for leadership and command in danger of perishing if their stock is not continued? The obstacles to the growth of population and the causes of misery and restricted livelihood in the mass of the people are not due to any law of population or to the niggardliness of nature. Neither our own little planet nor our own little island was overcrowded. The causes were rather to be sought in habits and institutions whose origin and purpose was mastery, privilege, and monopoly. The continuous unfolding of productive capacity depended on the prevalence of justice throughout the whole economic community. He did not pretend to any social or medical knowledge, but as an economist would like answers to many questions. How did gambling or the desire to get rich quickly operate? What was the effect of outdoor games and a life of pleasure on fertility? What was the effect of the conventions of each social class on its individuals? Did people follow medical advice on these subjects? And did people really know why they acted in a certain way? The term "overcrowding" was used very loosely, the standards adopted were rough, and halving of the population did not necessarily diminish overcrowding, even if the number of houses remained the same. Ordinary economic explanations were of no avail for this problem, and far more detailed inquiry and intelligent questioning of all classes by people who could put themselves in other peoples' places was needed.

The Biological Aspect.

Prof. F. A. E. CREW (Animal Breeding Research Department, University of Edinburgh) said the birth-rate of this country had fallen and was still falling, and that this was a matter of grave concern to those who chose to envisage the overwhelming of our prized culture by hordes of barbarians of this or that particular hue, but all equally and amazingly fertile. To the biologist, however, there was nothing remarkable and nothing necessarily ominous in this decline. If the conclusions which had emerged from the work of Pearl, Elton and others had been known when the birth-rate was soaring, the present fall would have

been foreseen and accurately predicted. The growth of all living things, whether pumpkins or peoples, followed the law enunciated by Pearl—namely, that the population at first grows slowly, gradually gains impetus, and then grows rapidly. Rapid growth is succeeded by a slowing off which ends in no growth at all. Increasing density led ultimately to complete saturation, and reduction in population was achieved by removing the surplus or by reducing the rate of growth. The first method of reduction was the catastrophic and was exemplified in rabbits, mice, and human populations, the catastrophic instruments being war, pestilence, and famine. The second or gradual method of reduction was revealed in the work of Pearl on Drosophila, the primary factor being a fall of fecundity and fertility with increasing density. Among pigs under similar conditions there was noticed a reduction in the size of the litters. Group biology was a new study. Experiments with animals did not necessarily apply to human beings. Man could adapt himself to a changed environment, and every advance in knowledge which enabled him to derive from his environment things conducive to his material welfare increased the potentialities for population growth in a given area. A rising birth-rate heralded an extension of the conquest of man of his environment, while a falling birth-rate was an indication that mankind was temporarily imprisoned. The birth-rate was now falling because this was the end of a population growth-cycle. A new growth-cycle would be initiated and the birth-rate would rise when those factors which were at present overriding the inherent tendency to increase were recognised or removed.

Fecundity was affected by inborn and environmental factors and different races, stocks, and individuals were distinguished, one from the other, by true-breeding differences in fecundity. In the human subject the tendency to multiple births was faithfully transmitted through both male and females. The time of onset of puberty and of the climacteric and also longevity were true-breeding characters. It was possible that in the past the inherently longer-lived had contributed disproportionately to the population, and that under modern conditions the shorter-lived lived longer and transmitted to their progeny a lowered fecundity. This would be a reasonable explanation of a lowered birth-rate if it could be shown that there was a high correlation between longevity and high reproductive rate. This country was now relatively overcrowded. Lack of houses was an indication of a relative regional over-population. If the builders failed to keep pace with the babies the birth-rate would fall. It was not known how density provoked its results, but the work of Pitt-Rivers suggested that sheer discouragement was enough to destroy a people.

What effect had the conflict of cultures? The birth-rate of the vanishing peoples of the South Seas was steadily falling, apparently because these peoples were discontented and discouraged, and consequently dying out. Did the arrival of an immigrant Irishman in Glasgow prevent a Scottish baby from being born? There must be joyousness, eagerness, roominess for potential parents or else the babies would not come. The birds, when they mated, built nests, but for human lovers the tenements were built by those who were ignorant of the relation which existed between population density and the reproductive rate. The sex ratio could not as yet be controlled. The fact that many women could not become mothers could not explain the falling birth-rate. A high marriage-rate associated with a low per-reproductive-woman birth-rate could yield the same reproductive rate as a low marriage-rate associated with a high per-reproductive-woman birth-rate. Few marriages and larger families might yield a high reproductive rate with less variety among the offspring and surely variety was to be desired. The present low birth-rate was in part due to sterile marriages. Two individuals mutually sterile might be fruitful in other matings. Possibly recent social and economic developments had encouraged the survival of stocks, which were relatively infecund or which reacted more readily to the disharmonies of industrialism. The peak of sex activity was at about 29 in the male and the woma reproductive power dropped shortly after 30.

Prosperity implied plentiful food and comfo and therefore a lower death-rate and a rising bi rate, and an unequally distributed prosperity mi create differential fertility among the social gra If a large section of the community were relativ unsuccessful and left with no other modes of nerv release than excessive drinking and sexual o indulgence, there would be a higher reproductive r in this section than among the community as a wh Social advancement implied a lower reproductive r as those who experienced it were presented with n varied modes of self-expression and self-indulge Unless it could be shown that the methods adopted birth control were effectual, it could not be accep that birth control was largely responsible for a fal the birth-rate. The fall in the birth-rate had been gentle; it had proceeded with evolutionary steadi and had been universal. This suggested the expres of some biological factor. He doubted if b control had affected the crude birth-rate, but s gested that it might have slammed the doors suburban houses to open those of a slum. The probl thus, was to determine the biological worthines the social grades. What was fitness? There was reason to suppose that it was linked with high-gr fecundity. The elephant and the earwig were fit had quite different reproductive rates. Was the hu standard of fitness to be good physique, good br and low-grade fecundity? If so, this ideal coul found abundantly among all social grades. suggestion that the relatively unfit were n abundant among the socially submerged was necessarily true. It was easier for a good ma climb out of the gutter than for a biologically unwo scion of an established family to descend because latter was buoyed up by his associates. If b control had played a part, it would have been for humanity if it had been the only responsible ag used intelligently by a people, who knew what t did and why they did it. At present it seemed t the methods adopted were too uncertain to allo any policy being based upon them. In his conclu remarks Prof. Crew said he had tried to be provoca and had incautiously stepped from the solid gro of fact to the uncertain terrain of opinion, but tha set no great store on his opinions and would not n exchanging them for better ones.

The Medical Aspect.

Sir THOMAS HORDER thought the falling birth- was a matter outside the province of medical r They must have more facts from the biologist and economist. Sex incompatibility was a mystery and laws of reproduction were inscrutable. The prolo tion of life was a small matter, but the saving of life the improvement of health were great matters. age was on the increase. We had a lower birth- and would ultimately have a higher death-rate. visitor from another planet would be amused to us worrying over a falling birth-rate when so rece we were complaining of the rapid increase of the p lation. He did not think the differentiation of birth-rate resulting in poorer quality came within doctor's sphere. The husband and wife usu consulted the doctor when they had made up t own minds on this matter. If the doctor was to e this field he must be taught very differently. If were to breed from superior parents Governm would have to fix a minimum of, say, three chil with a double minimum for very superior par and subsidies would have to be provided from t who did not comply with the minimum. Sociolo must arouse interest in eugenics before the do could take a hand. The profession had stood owing to want of data.

Lady BARRETT (London) dissented from Sir Tho Horder's view that this was not a matter for medical profession. She gave many statistics regard to the fall in the birth-rate, and also

istics with regard to the fertility of women accord- to their age at marriage, derived from the experi- e of Scotland in 1855. She concluded that 25 was best age for marriage. If the true facts were wn with regard to the chances of immediate ception many more young couples would begin r married life in a natural manner. If there was ger to the mother from childbearing the family tor was the best person to advise. Medical lents should be taught all that was known on this ject in order that they might give suitable advice heir patients. Unless the medical profession took nterest in this problem and spoke out there was a it danger of race deterioration as the result of the erential birth-rate.

Discussion.

r. WILLIAM COLLIER (Oxford) said that for 40 years h control had been practised in the professional ses, and they had no right to deny information he working classes. If medical science set itself mprove methods they would be improved. They t not sit on a hedge because the subject was asteful. Panel practitioners had no time to advise, should refer their patients to good clinics. A -class birth control clinic had been inaugurated ambridge under medical direction, but in spite of support of the Oxford Medical Society they had with much opposition and had been unable to blish one at Oxford.

r. LETITIA FAIRFIELD said that the doctor's ning gave him no locus standi. More biological were wanted. Causes of the falling birth-rate voluntary and involuntary, but the involuntary es were not really natural laws. Joy in life luced the desire for children, and regard for the th of the mother produced a reasonable form of control. She did not think they need worry about falling birth-rate.

r. BINNIE DUNLOP (London) said there was a real and for information on this subject, and caused amusement by his suggestion that there should no more children till all the adults had been factorily provided for.

rs. NEVILLE ROLFE dealt with the effect of vation. The birth-rate in Italy had declined, it remained high in China and among the Jews, religious motives. The necessary fillip to the -rate referred to by Prof. Crew could readily be lied by emigration. We had areas crying out for e population, and we ought to emigrate good . Under the 1922 Act local authorities could , equip, and emigrate, but they only emigrated . They should go in for group emigration with oken British family traditions. Local authorities ld send out girls and boys in equal numbers. gration was the best means of stemming the ne in the birth-rate.

. N. E. WATERFIELD (Banbury), from his experi- as a general practitioner, thought parents asked nd acted on the doctor's advice.

Reply.

of. ROBERTS asked if social conditions were just, suggested that many of these problems would be d if the ideals of the community were raised.

of. CREW agreed with the importance of the vating force, and said a new religion was needed. grants should be successful people at the repro- ive age.

SECTION OF PREVENTIVE MEDICINE.

CONTROL OF INFECTIOUS DISEASE.

he value of present methods of controlling infec- diseases was discussed under the presidency of E. COLSTON WILLIAMS (Cardiff).

Small-pox.

. L. J. RAJCHMANN (Director of the Health nisation, League of Nations) surveyed the viour of small-pox in the various countries of world. Events at Rio de Janeiro in 1926, and in ria in 1926 and 1927, showed, he said, that severe outbreaks of small-pox had not ceased to occur. During 1927 a large area of Europe was free from small-pox; since 1919 there had been a huge drop in its prevalence in Rumania and Soviet Russia; in each case notification had improved. In the Far East there had also been a drop. During the late war England and France remained clear; in Germany in 1917 the barriers against small-pox broke down, and this was much more the case in Austria, Hungary, and Italy. The crest was reached in 1920; after that came the decline. In 1927 there were no cases in 15 European countries, and very few in 15 others. In France, in spite of efficient vaccination, the prevalence was said to be kept up by imported cases. In France, Germany, and Italy the disease was of the classical type. In Switzerland a mild type of small-pox, similar to that in England at present, was prevalent from 1921 to 1926, but has now entirely disappeared. The case mortality of small-pox varied greatly not only between one country and another, but also from year to year. Italian statistics were particularly interesting, and showed that the severity of the disease and its case fatality underwent cyclical variation, roughly in seven-year periods. There was no evidence that the classical type was being replaced anywhere by the mild type. The case fatality in England from the mild type was now between 0·2 and 0·3 per cent. In Germany during 1919 to 1922 the case fatality varied from 12 to 16 per cent. In France the case fatality was between 28 and 29 per cent. from 1919 to 1921. In Rumania the figure of 28 per cent. for 1919 became 12 per cent. in 1923. In extra-European countries the figure varied from 10 to 30 per cent. In India and Korea during 1926 and 1927 it was about 25 per cent. In Java the figure 26 per cent. in 1918 fell to 12 per cent. in 1923, and was only 2·7 per cent. in 1927—a very low figure for a tropical country. Figures for Africa show that a low case fatality of 2 to 10 is not uncommon, but that severe epidemics with a 30 per cent. mortality do occur. In European countries there are no statistics for trustworthy death-rates according to age-periods, but the Italian statistics show a marked excess of the female rate at ages from 20 to 44. Owing to the influence of the vaccinal condition it is difficult to determine whether fluctuations due to any other cause occur. The seasonal distribution of the mild and severe types did not differ materially.

Dr. J. MIDDLETON MARTIN (Gloucestershire) pointed out that mild small-pox was no new thing, and that in the past inoculation had come into fashion when the type of the disease was mild. The tendency to regard infection as being spread by persons rather than by infected articles was growing, and belief in aerial spread of infection was practically given up. Their main business was to prevent case to case infection. Their principal difficulty was the detection of mild small-pox. Small-pox was not a dual disease but one disease of varying severity. The percentage of vaccinated school-children in Gloucestershire had dropped from 70 to 25, and their present means of control depended upon quickness in detection.

Dr. T. EUSTACE HILL (Durham County) had no doubt that the mild disease was true small-pox. They had had 12,634 cases from 1922 to May 31st, 1928, with 34 deaths. Of the 34 deaths, 6 occurred under 1 month of age, 4 under 3 months, 2 at 1–2 years, 3 at 2–5 years, 3 at 5–15 years, 5 at 15–25 years, 1 at 25–45 years, 5 at 45–65 years, and 5 at 65 and upwards. The cost to the county had been £120,000, but nevertheless he thought they ought to continue isolating the cases as they could not trust to the mild disease breeding true. Discussing methods of control, he argued that it was impossible to make vaccination compulsory at present. He paid tribute to the valuable work done by the port sanitary authorities. Wilful concealment and failure to diagnose impeded prompt notification. All medical officers of health should make themselves expert in diagnosis, and county medical officers of health should act as consultants. The supervision of contacts was not always efficient. They had successfully pooled

the hospital accommodation in Durham County, and they had not found that overcrowding the hospitals had caused septic cases. "Return" cases had occurred owing to the demand for hospital accommodation. Disinfection was still advisable. He had had no experience of the supposed relation between encephalitis and vaccination. (Dr. Rajchmann in his opening remarks mentioned that a Special Commission of the League of Nations was at present investigating this matter.)

Dr. R. P. GARROW (Chesterfield) explained the continuous prevalence of small-pox in this country by the extraordinary mildness of the cases. Even confluent cases were not ill. The refusers of vaccination were of the lowest class. He suggested the omission of hospital isolation and the treatment of cases at home with vaccination of the contacts. At the present time in his district it was considered preferable to have a pleasant three weeks in hospital with small-pox than to suffer from vaccination at home. He believed that the mild type was a separate disease, and that even if it did change its type the occurrence of a few deaths would stimulate the demand for vaccination.

Dr. R. BRUCE LOW (Ministry of Health) thought the mild type was not so trivial, and was apt to be fatal to the newly born; he urged the need for stamping out the disease, and showed that the present failure was caused by the well-tried preventive methods not being properly enforced. He suggested that owing to the mildness of the disease the general practitioner regarded it with scorn; the cases were not promptly removed, the contacts were not followed up carefully, and there was no propagandism with regard to vaccination. He suggested that the mild type was more easily stamped out because it was less infectious, and that supervision of contacts should be extended from 16 to 20 days because the appearance of the rash was frequently delayed. To show that the mild type was no new thing he quoted from the letter of a doctor in 1722: "one type of small-pox the nurse cannot kill and one type the doctor cannot cure."

Sir MALCOLM WATSON (Malaya) showed how small-pox had been stamped out in the Malay States by efficient vaccination, and suggested the advisability of postponing vaccination till after the first year of life.

Dr. A. E. BRINDLEY (Derby) emphasised the large amount of concealment of the disease which went on.

Prof. HAROLD KERR (Newcastle-on-Tyne) said that contacts dreaded vaccination more than the disease, and hoped that it would be possible to reduce the virulence of the lymph even if it shortened the period of immunity. His town gave compensation to those who were laid off work owing to vaccination. He mentioned the case of seven painters who were exposed to infection and vaccinated. Three were off work, one of them for 11 weeks, and received their wages all the time. He did not agree with Dr. Garrow's proposal to leave the cases at home. The medical officer of health of a neighbouring district had refused to believe that the disease was small-pox. As a result infection spread to Newcastle and the consuls arranged for ships to be taken to other ports. In any ordinary big town the mild type of the disease could be controlled without difficulty.

Dr. R. M. F. PICKEN (Cardiff) said that better-class persons were also refusing vaccination. It was impossible to get efficient vaccination and revaccination against this mild type of the disease. Stunts for the vaccination of the whole population would only make us a laughing stock.

Diphtheria and Scarlet Fever.

Dr. R. A. O'BRIEN gave many instances to show how outbreaks of diphtheria could be prevented and controlled in resident schools and among hospital staffs, and went on to discuss some of the failures to apply our present knowledge. If antitoxin were given in the first 24 hours of the disease there would be no deaths from diphtheria. Statistics from the U.S.A. and from the reports of British medical officers of health showed that there was much delay of parents in calling in the doctor, much delay of doctors in making a diagnosis, further delay in waiting for the examination of the swab, and that frequently in the end an ineffective dose was given. Recent work showed that out of a thousand Schick-negative cases 97 per cent. remained negative after periods varying from one to seven years. Immunised persons who became Schick-positive rapidly regained their negativity with a Schick test. Three doses at intervals of one week was still the best method administered, but it was possible to give the Schick test after the first immunisation dose simultaneously. Some persons became immune after the first dose and some after the second. Dr. O'Brien described the work which was going on for the purpose of improving the methods.

Dr. J. GRAHAM FORBES (London) described the progress which is being made in London and throughout the provinces in immunising the children at welfare centres and in the schools against diphtheria. Thirteen of the London boroughs have now provided such facilities, and some outside districts, such as Willesden and Tottenham. In addition to this, very satisfactory results had been obtained in many residential institutions and among the staffs of the M.A.B. hospitals. There was a considerable increase in this work during 1927 throughout the whole country.

Dr. B. A. I. PETERS (Bristol) described the very satisfactory results obtained in the immunisation of the hospital staffs of Bristol. They had found that the Schick test was not always reliable in the case of very virulent strains of diphtheria. They had now adopted for the hospital staffs immunisation without previous Schick testing. Their experience of immunisation against scarlet fever had also been satisfactory; he thought that all local authorities should adopt immunisation methods for their hospital staffs.

Dr. E. H. R. HARRIES (Birmingham) referred to the great value of surgical treatment of the naso-pharynx in reducing the number of "return" cases of scarlet fever and diphtheria. The examination of throat swabs as a method of testing the fitness of diphtheria patients for discharge was now being given up. Although scarlet fever was usually mild in the case of children it was not always so in the case of probationer nurses, and it was well worth while to protect them by immunisation. He said it was high time that more facilities were provided for the education of medical students in the fever hospitals. They should act as clinical clerks for, say, a month, instead of the present spasmodic visits. "Return" cases of scarlet fever could best be prevented by immunisation of the contacts in the home. In order to secure the success of these new methods it was very necessary to have the full coöperation of the general practitioners.

SECTION OF PUBLIC HEALTH.

THE TEACHING OF HYGIENE.

In opening this discussion, over which Dr. R. M. PICKEN (Cardiff) presided, Prof. W. W. JAMESON (London School of Hygiene) limited his remarks to the teaching of preventive medicine to medical students, and to the training of other members of the health services. General practitioners being the first rank of health workers every effort must be made to arouse the preventive outlook among medical students. In this teaching mere sanitary engineering need not fill a large place; lectures for medical students should not be regarded as lectures for experts for the use of experts. Although the syllabus was much too wide at present it failed to deal with the sociological aspect. In the training of sanitary inspectors he attached great importance to experience as craftsmen in one of the building trades. There was a danger that such craftsmen might be kept back by the demand for too high a standard of gen

cation. He thought there should be more than port of entry for health visitors, although he ued highly the training of a nurse. These should probationary, and the salaries of health visitors per should equal those of teachers in elementary ools. In the training of midwives a distinction uld be made between those who intend to practise those who are going to take up other health k. The principal midwifery schools should be rved for the former, who should also have district ning. For the latter a minor qualification, which ht be termed "obstetric nurse," would suffice. ses who underwent training in a fever hospital e in an unsatisfactory position. If general pitals accepted them subsequently they were ted as if their fever training had been of no unt. Every trained nurse should have some r training, and one year of her training might be oted to this purpose. Health education in the ols should be carried out by teachers of the right e, and not by doctors or school medical officers. teachers needed to be taught hygiene on more active and practical lines than at present. Many l authorities had not taken any interest in health cation. He referred with approval to a syllabus wn up by Dr. Brackenbury in 1904, when chair- n of the Hornsey Education Committee, which, n minor alterations, had been in use ever since. ally, they must get the general practitioner to an interest in the education of the public. As rds broadcasting, he would prefer four-minute dcasts on matters of special health interest at particular moment, to the present 15 minutes th talks.

r. H. B. BRACKENBURY (chairman of B.M.A. ncil) expressed himself in agreement with Dr. eson. The General Medical Council, he pointed has no direct power over the teaching bodies, it can prescribe curricula and inspect examina- s. It was impossible to coördinate the work of ting voluntary health education bodies, 100 in ber. He thought that schools and general titioners should be the most effective instruments ducation. By educating the children they re- ated the parents. Education in sexual matters ld only be given to older girls by head teachers pecially qualified teachers; it had been success- done on these lines in Hornsey. There had erto been no attempt to deal with these questions secondary schools. The question of mental ene had been neglected, and teachers needed uction how to deal with mentally unstable and able children. He had not much faith in the fits likely to accrue from public lectures or from ectures of insurance practitioners to their patients. would put first in importance the schools, second day by day advice given by practitioners, and l the work of the health visitors in the homes.

r. D. LLEWELYN WILLIAMS (Welsh Board of lth) believed that the panel doctors had done h good since 1913, and were in a position to do l research into the beginnings of disease. They t secure a preventive outlook all through the ical curriculum. Birmingham had instituted ires by panel doctors to their own patients, for h the insurance committee paid full fees. The ts were claimed to be good.

. BRACKENBURY intervened to say that the esentative Body was doing its best to encourage ation by practitioners. A new household maga- was about to appear, and the Council of the ciation had accepted the responsibility of supply- ne page on health matters. The articles would nsigned.

. OLIVE WHEELER (Professor of Education, iff) emphasised the importance of close coöpera- between medical and educational bodies. For teaching of hygiene in the secondary schools ified biologists were needed; at present there more females than males taking up biology g those trained. Some of the biological teaching must be practical—e.g., gardening. For the primary schools the teaching of hygiene is not living and imaginative enough; nature study should be correlated with hygiene and health practice. In their four years' course for teachers the fourth year was given up to the application of biology and other sciences. They also studied psychology and such questions as fatigue and development from a biological point of view. Practical teaching in physical exercises and the playing of healthy games was important. They had in Cardiff a "College adviser of games," who worked in close touch with the medical officer of health. It was too late to begin at the age of 5, and therefore nursery schools were needed for the teaching of habits.

Prof. HAROLD KERR (Newcastle-on-Tyne) thought much could be done to make the course of lectures in hygiene for medical students more interesting. He showed what a large amount of field work was included in the course given at Newcastle, and claimed that as a result the students who subsequently practised in the neighbourhood were his best supporters.

Mr. JAMES MACKENZIE (Secretary, Industrial Health Education Society) described how his society was getting in touch with workers in all occupations, and arranging medical lectures to such workers. The workers chose the subject, the medical officer of health helped to find the right lecturer, and "heckling" was encouraged. The workers were anxious for information about the many occupations inimical to health and life. In spite of huge expenditure on sick and medical benefits not a penny was spent on education under the Insurance Act.

Dr. ERNEST JONES (M.O.H., Cardiganshire) agreed that the teaching of hygiene had failed because the teachers had no knowledge of the sciences on which it was founded. Health knowledge would be a better name for the subject. He described the methods of teaching biology and physiology and their application to the students at Aberystwyth College. His suggestion that the clergy would benefit by a course of biology aroused applause. There was too much psychology and too little biology; they needed more science and less classics.

Mr. CREW (Sec., Central Health Education Council) favoured education by panel doctors. Ordinary public lectures did not reach the right people, and his society's experience of lectures by panel doctors was not very good. His society arranged successful medical lectures in the schools, and for the explanation of health films.

Mr. H. S. BOMPAS (Sec., Dental Board Health Campaigns) described what the Board did in the matter of organising dental lectures and supplying first-class apparatus free of charge. He found that local authorities sometimes had good schemes only on paper, and that teachers and health visitors knew the requirements of the district best. Some education committees had little enthusiasm. The Dental Board's films had been shown all over Northern Ireland, but they were not allowed in Scotland.

Prof. F. E. WYNNE pointed out that the public health lecturer could not choose the subjects which he thought best because he had to fit his students for an examination conducted by other examiners.

Dr. A. G. ROBB (Belfast Fever Hospitals) thought every nurse should spend some portion of her training in a fever hospital.

Dr. CARSTAIRS DOUGLAS (Anderson College, Glasgow) agreed that sanitary engineering figured too largely in the public health course.

Dr. C. F. L. LEIPOLDT (Cape Town) pointed out that there was no teaching with regard to the normal child in the medical curriculum, and that the qualified medical man had to learn by experience in the schools.

Dr. LETITIA FAIRFIELD urged that teaching should be practical, and Mrs. NEVILLE ROLFE drew attention to the failure to supply health education for the three million adolescents of the country.

SECTION OF THERAPEUTICS.

Treatment of Gastric Diseases.

Dr. A. F. Hurst (New Lodge Clinic) opened a discussion on recent advances in treatment, remarking that he was himself unwilling to diagnose gastric or duodenal ulcer without direct X ray evidence, or to diagnose cancer of the stomach without evidence of occult blood in the stools. The fractional test-meal had also led to far more precise diagnosis. Dealing with the treatment of gastric ulcer, he said that the first factor to be dealt with was the acid factor, and this must be combated by diet and by such drugs as belladonna and alkalis. The second factor was that of focal sepsis; he doubted whether any ulcer could occur without such a factor. He stressed the importance of sinus infection and residual infection in the jaws of edentulous patients, to be found only by careful radiography. The other factors of importance were tobacco, worry, and fatigue. The latter factors necessitated treatment in bed. He showed by charts the effect of small feeds at frequent intervals in preventing the appearance of free HCl even when no alkali was given. Repeated X ray examination and search of the stools for occult blood were of value in demonstrating the progress of treatment. As regards after-treatment, he stressed the importance of an ulcer diathesis. Recurrences were usually due to a return to faulty habits, which must be prevented. Recent work had shown that bismuth salts were ineffective as alkalis whereas sodium citrate had high anti-acid powers; it was valuable in that its use involved no risk of alkalosis. Tribasic magnesium or calcium phosphate was also of great value and preferable to sodium bicarbonate and magnesium hydroxide. In conclusion Dr. Hurst spoke of the value of gastric lavage in pyloric obstruction; cicatricial obstruction was rare and would not result if the cases with spasmodic obstruction were rapidly treated. In chronic gastritis, associated with achlorhydria and excess of mucus, great improvement followed gastric lavage with hydrogen peroxide solutions.

Dr. T. Izod Bennett (London) said that it was perhaps difficult to speak of recent advances in the treatment of peptic ulcer at a time when the treatment adopted by many of the physicians chiefly interested in this subject had not yet been accepted by the professional in general, although such treatment had been successfully in vogue for ten years or more and had not been greatly modified during that period. He found that surgeons were inclined to condemn physicians merely because they were not magicians; the physician did not expect to cure except by the logical application of certain scientific principles over a period of time which must in some cases be somewhat lengthy. The essentials for successful treatment were, said Dr. Bennett, as follows:—

1. The removal of all sources of focal sepsis.
2. Prolonged and efficient arrest and neutralisation of gastric hyperacidity.
3. The reduction of peristaltic movements in the stomach and duodenum by an appropriate diet given at suitable intervals and so prescribed that the diet itself would exert a neutralising or adsorbing effect on acid.
4. The maintenance of active treatment during a period sufficient to secure permanent healing.
5. Prophylactic treatment aiming at the prevention of relapses.

All of these essentials were important and many of them were missing or insufficiently emphasised in treatments devised prior to that of the late Dr. Bertram Sippy. From a different point of view few of the treatments recommended were exactly on the lines of Sippy's because diets had to be devised to meet the requirements of patients of different nationalities. Prof. W. C. Alvarez, of Rochester, recently stated he had never seen a patient seeking relief for peptic ulcer who had, in his opinion, been efficiently treated prior to his first consultation with him, and it was a fact to-day, said Dr. Bennett, that the vast majority of patients coming under observation had never had treatment in which it could be claimed that the essentials outlined above had been carried out. Alkali is frequently given and alm invariably in insufficient dosage. Patients are trea for weeks and often undergo severe operations with important sources of oral sepsis ever being remov It is an easy matter to relieve the pain for a pati with gastric or duodenal ulcer, in most cases restricted diet and the administration of alkali, unless such treatment is carefully planned and car out for months after all symptoms have finis relapse is almost sure to follow. In his opin patients should be seen in consultation at reg intervals of three months or six months for a l time after they are apparently restored to full hea and at such consultations care should be taken to that oral sepsis has been removed, that food likely promote excessive peristalsis or hypersecretion being avoided, and that large meals are never tak reliance being placed on intermediate feeds to sec adequate nutrition. Proper attention to these po led to successful results.

Dr. J. H. Anderson (Ruthin) stressed the imp ance of coöperation with the patient. Three mo was the minimum time for strict treatment; the month should be in an institution; the second mo as convalescence, and during the third a gradual ret to work could be begun. After-treatment should on for at least two years under supervision consultation with his own doctor. The appe was an additional source of infection and should removed if necessary, but after-treatment sh again be in the hands of a physician. Regarding he advocated a graduated diet beginning with o oil and egg and milk at two-hourly intervals, bo rice and pounded chicken being gradually ad By the twentieth day dry toast, steamed fish, custa and milk puddings are given. At the end of the mo a light bland diet with olive oil between meal given. The rate at which the diet can be incre varies in individual cases and must be determ according to progress. Of alkalis he supported use of magnesia salts, although the subject of most suitable alkali was still being examined. agreed with Dr. Izod Bennett as to the necessit time to secure firm healing.

Dr. P. Hamill (London) stressed the necessit impressing on the patient the fact that his cure in his own hands. He felt that elaborate syst were bad because of the difficulty of applying t at home. He agreed with Dr. Hurst as to the valu sodium citrate. Ten grains of magnesium oxide w neutralise 10 oz. of gastric juice as secreted, 10 magnesium carbonate or chalk, on the other h would only neutralise 4 oz., and bismuth was al without effect. Citrates were valuable for avoi the clotting of milk. The value of atropin preventing spasm was to be remembered. It remarkable how readily patients with gastric tolerated olive oil. A most important adjuvan treatment was the use of blood transfusion in which had had severe hæmorrhage. Duodenal fee was sometimes of great value in cases where obsti pain and vomiting prevented adequate nutr under oral administration.

Dr. A. P. Cawadias (London) emphasised the that focal infection was but one of many fac amongst which constitutional factors in the endo system were equally important. He thought pr shock therapy was very valuable in alleviating and hastening healing.

The President, Dr. W. Langdon Brown (Lon summing up the discussion, said that he felt stomach was often more sinned against than sin being an organ essentially resistant to disease. felt, however, that gastric ulcer was a disease v had become commoner without obvious cause. R feeding had rightly fallen into disrepute. He that the Lenhartz diet had been a great advan its day, but modern treatment recognised importance of the individual patient's requirem The importance of hydrochloric acid as a germ was being more fully recognised, and the admin tion of this acid in cases of achlorhydria was of

ortance. He praised the work of Gibson and ers in putting on a firmer basis our knowledge of alkalis of real value. The pendulum was swinging nst the tendency to operate hastily. Hæmorrhage no longer an indication for operation before quate medical treatment had been tried. He luded by refuting the doctrine enunciated at the cer Conference that all ulcers should be excised account of the risk of malignant change. The ence was that gastric cancer almost invariably e in cases where there was no sign of any previous ase of the stomach, and the public were already ciently alarmed about cancer without the intro- ion of such a bogy.

r. HURST, in reply, emphasised the importance of nic gastritis as revealed by fractional gastric ysis. He briefly reviewed the results of surgical tment of gastric ulcer; the mortality of gastrec- y in a famous hospital was 15 per cent.; the tality of medical treatment was nil and there were tically no cases which could not be cured medically oper care was given to them.

FECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 11TH, 1928.

otifications.—The following cases of infectious ase were notified during the week:—Small-pox, (last week 111); scarlet fever, 1322; diphtheria, ; enteric fever, 174; pneumonia, 592; puerperal r, 45; puerperal pyrexia, 99; cerebro-spinal fever, 5; e poliomyelitis, 14; acute polio-encephalitis, 1; phalitis lethargica, 20; continued fever, 1; dysen- , 22; ophthalmia neonatorum, 132. No case of era, plague, or typhus fever was notified during week.

e following counties each notified three or more cases teric fever:—London, 40; Devon, 6; Essex, 28 (of these om Colchester); Kent, 9; Lancaster, 13; Middlesex, 7; olk, 4; Southampton, 7; Surrey, 11; Warwick, 3; Yorks, Riding, 5; City of York, 5. The total of 174 includes ases of paratyphoid fever, of which 37 were notified in on and 6 in Surrey.

e number of patients in the Infectious Hospitals of the opolitan Asylums Board on August 21st–22nd was as vs:—Small-pox under treatment, 12; scarlet fever, ; diphtheria, 1553; enteric fever, 120; measles, 169; ping-cough, 216; puerperal fever, 15 (plus 7 babies); phalitis lethargica, 71; poliomyelitis, 2; "other ses," 16. At St. Margaret's Hospital there were 19 s (plus 11 mothers) with ophthalmia neonatorum.

eaths.—In the aggregate of great towns, including don, there was no death from small-pox, 7 (5) from ric fever, 12 (1) from measles, 2 (0) from scarlet , 23 (4) from whooping-cough, 23 (6) from theria, 72 (18) from diarrhœa and enteritis under years, and 27 (5) from influenza. The figures in ntheses are those for London itself. The monthly ment of deaths from small-pox contains the mation that no such death was returned for the th of July.

e fatal cases of enteric fever outside London were ted from Leyton and Rochdale. Of the 19 fatal cases hooping-cough outside London 6 were reported from ingham while Glasgow reported the same number that . Of deaths from diarrhœa Liverpool reported 11; her town in England and Wales outside London more 4, but Glasgow 7 and Dublin 8.

number of stillbirths registered during the week 299 in the great towns (corresponding to a rate per 1000 births), including 48 in London.

REVOLVING OPEN-AIR HOUSE.—The West London ital at Hammersmith has been presented with a ving open-air house which has been placed on the flat of one of the wings. It has been the practice to place lescent children on the roof in settled weather, but evolving house now enables them to take shelter in vent of rain. The house will hold from seven to ten ren.

Special Articles.

VITAL STATISTICS OF ENGLAND AND WALES.

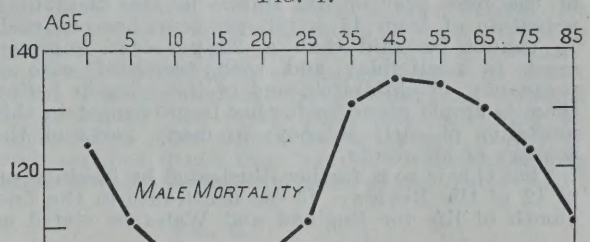
THE REGISTRAR-GENERAL'S REVIEW OF 1926.

THIS third of the volumes[1] in which the General Register Office now presents its annual statistical review is one which is, or at least ought to be, eagerly looked for by all medical officers of health and others interested in the incidence of disease. In fact, we fear it is read by few, and there can be no question that the public health service is the poorer by this default. The health officer who has studied this annual volume has increased his competence for his routine work year by year; he has had suggested to him problems for research which he can pursue; and his faith is fortified in the belief that for the pursuit of such researches there is not needed that knowledge of higher mathematical methods, fear concerning which has restrained timorous persons from inquiries of real public value. The present volume is perhaps the most interesting of a series of valuable medical reports which appear year by year; we can only hope to touch on a few points illustrative of the further riches waiting for extraction from a rich storehouse.

Progressive Ageing.

The progressive ageing of the English population is a phenomenon which it is difficult always to remember, although it has momentous bearing on our present and prospective vital history. The fact that the female

FIG. 1.



death-rate in England and Wales last year was only 10 per 1000 illustrates the importance of remembering that the steadily falling birth-rate is now meaning a relatively small proportion of children under 5, and will before long mean a larger proportion of persons over 55, whose death-rate is higher than that at intermediate ages. It is very easy to fall into the error that such a death-rate means an average duration of life for each person of 100 years. In truth, it only means a duration of about 59·6 years, owing to the facts just mentioned. Hence the necessity for the standardised death-rates used throughout this report, in which adjustments are made for these excesses of persons at certain ages, as compared with an arbitrary standard population.

Much interest attaches to the death-rates in the two sexes at different ages. In Fig. 1 these are shown graphically in relation to each other. Let the straight be the death-rate at such successive age-period for females. Then the upper curve gives the corresponding male death-rate. The curve of the male death-rate is profoundly interesting. At ages 0–5 the male is 24 per cent. in excess of the female death-rate, an

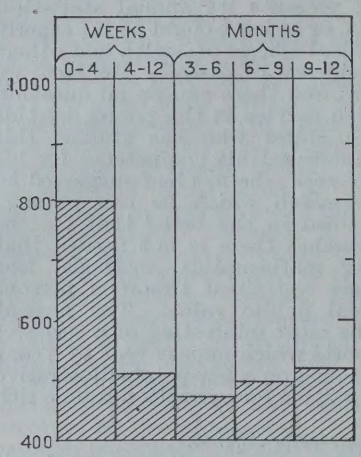
[1] The Registrar-General's Review of England and Wales, 1926, Text. 5*s*.

early female superiority of which no full explanation has been made. Between 10 and 25 the male inferiority is only some 4 or 5 per cent.; but at ages 45–55 the male death-rate is some 35 per cent. in excess of that of women. As old age approaches so do the death-rates for the two sexes come nearer together.

Infant Mortality.

The whole question of infant mortality is dealt with exhaustively, and the student will find here data bearing on every phase of this multiform problem. We can only draw attention to one point. This relates to the constantly reiterated statement that practically no progress has been made in securing a reduced death-rate during the first four weeks after live birth. The real facts are shown in Fig. 2. Comparing the average experience of 1906–10 with that of 1926, it will be seen that at this earlier period of "irreducible" mortality a reduction of over 20 per cent. has been experienced; while at the four subsequent divisions of the first year of life shown in the diagram a reduction of from 47 to 52 per cent. has occurred. It cannot be said that a 20 per cent. improvement is negligible; and with increased care of pregnancy, of childbirth, and of the lying-in period there is ample room for further improvement in this mortality of early infancy—in many parts of the country at all events.

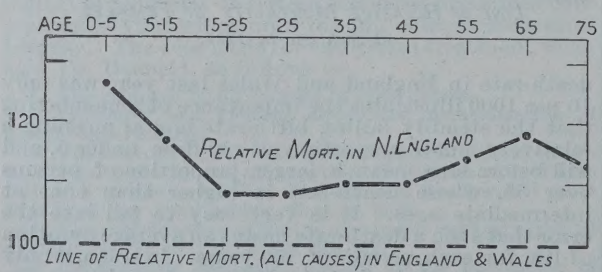
FIG. 2.



Relative infant mortality in 1926 as compared with that in 1906–10 taken as 1000 for five consecutive age-periods in infancy.

That this is so is further illustrated by Table X. on p. 12 of the Review. If the death-rate in the first month of life for England and Wales be stated as

FIG. 3.



100, it is highly significant that it is as high as 116 in the north of England and only 82 in the south! It is incredible that this difference between north and south is intrinsic and is not a difference in the degree of liberation from the barbarism of lack of skill or care.

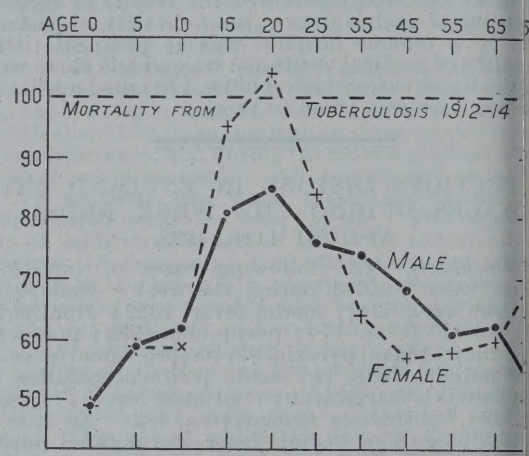
Total Death-rates North and South.

That this latter explanation holds is confirmed by the experience of north and south as regards total death-rate from all causes at successive periods of life. Fig. 3 shows the percentage excess of the northern areas of England over the average for England as a whole in the year 1926. This excess, which as shown in previous reviews, is not limited to industrial towns, calls for painstaking health inquiries in each northern community. The diagram contrasts north with the whole of England. Evident north were contrasted with south the contrast w be even greater.

Tuberculosis.

The whole of this section of the Review shou studied by tuberculosis officers and others. amount of improvement in the registered death from total tuberculosis, when so recent a perio 1912–14 is compared with 1926, is shown in Fi Even after allowance has been made for the fact the decrease of tuberculosis at ages 0–5 ma exaggerated owing to changes in nomenclature reduction shown at ages is most striking will be noted that actual death-rates for each

FIG. 4.



Relative death-rate from total tuberculosis in 1926 for eac and all age-periods compared with the corresponding ra 1912–14 taken as 100.

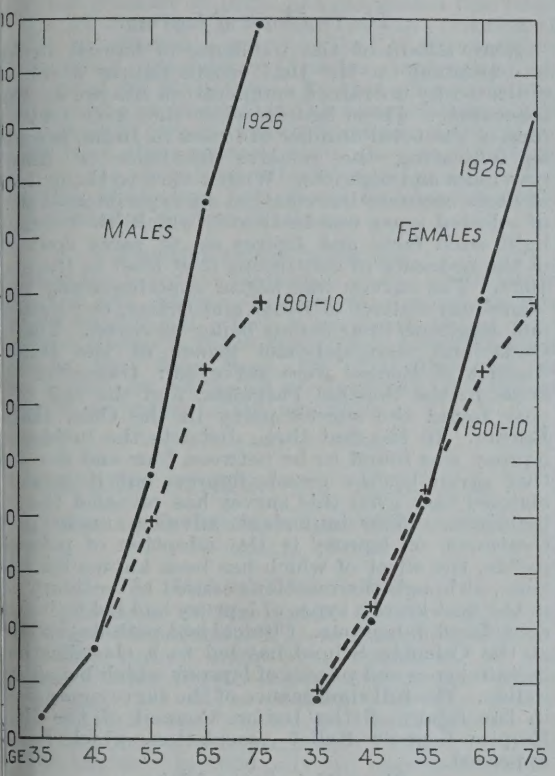
period are not shown in this diagram, but percentage difference of the death-rate (mal female) in each age-period from that of 1912–14. males it is seen that reduction has been experie at all ages, and that even at the age-period 15–20 decrease is 19 per cent., while at the age-period 2 it is 15 per cent. The smaller decrease at these than at other ages indicates a continuance of inir influences which remain to be studied and remo The course of the female relative death-rate bi out this point even more strikingly. At ages 15–2 reduction in the tuberculosis death-rate is only cent. and at ages 20–25 it has actually increase 4 per cent. It is impossible to avoid connecting increase of the female death-rate in early adult with the increasing migration into towns and assumption of industrial and commercial in lie domestic life.

Cancer.

The section of the Review dealing with malig disease is so important as almost to call for a sp article. Doubtless this section of the report wi more eagerly scanned than any other, and it ma hoped that it will serve to temper and curtail rash statements on the statistics of cancer which i with monotonous inaccuracy. In view of exaggerated statements as to increase of ca Fig. 5 is very instructive. It is drawn Table XLIII. on p. 64 of the Review. The distributed cancer death-rate at successive dec of life from 35 onwards for 1901–10 is compared that of 1926, for males and females separa Earlier ages are ignored, as the cancer death-ra almost negligible prior to age 35. In both males females an increased death-rate is shown, but th practically limited to ages over 55 and does become serious until the age of 65 is reached. shows in the first instance the folly of writing a crude death-rates from cancer and the need so-called standardisation. When this is done

istered increase at all ages in male cancer between 1–10 and 1926 is 30 per cent.; according to the de death-rate it is 71 per cent. One must remain

FIG. 5.



h-rates per million at each age-period 35–45 to 75 and upwards n cancer in the two sexes, 1901–10, being compared with 1926.

ome doubt as to the extent to which the increase ancer at the higher ages is real, and the extent to ch it is due to increased accuracy in diagnosis and cially to the greater frequency with which skilled opsies are now made. In this nexion it may be noted that stered cancer mortality is highest he denser centres of population, as pointed out in the Review, excess in urban centres is much ter for males than for females. s well-known that the proportion inaccessible growths, liable to pe recognition as cancer, is much er for the male sex.

noteworthy fact is that since 3 there has been a practical nce of recorded increase of cancer females, there being no increase ortality from accessible growths a comparatively slight rise for ers in females of inaccessible s. An important statement on 68 of the Registrar-General's iew is based on a revision of rmer comparison made between er in accessible (easily diagnos-) and inaccessible parts of the y. In a preceding review such a parison showed definite increase ccessible cancers, a result sup-ing the view of continuing ease in the death-rate from er. More recent returns, however, show that r both sexes alike, there is no longer any ence afforded by the comparison of accessible inaccessible sites in favour of the reality he recorded increase."

The interpretation of this result, which fits with observations made many years ago on the statistics of Frankfort-on-Main by King and Newsholme, is of course doubtful. It may mean that any apparent increase in inaccessible cancer is due to improved diagnosis; or, as pointed out in the Review, the facts are capable of an explanation of a totally different character. It may be that surgery has secured for the community a stationary position in the death-rate from "accessible" cancers which otherwise would have displayed a death-rate increasing like that of "inaccessible" cancers. Who shall decide? This opens up the great question as to the extent to which death certificates can be trusted to state

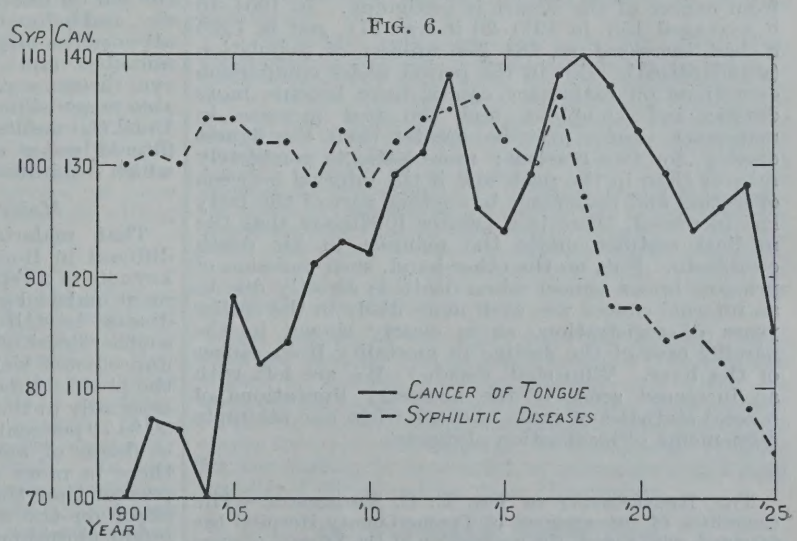
Death-rates from Cancer per Million Living.

Site of disease.	Males.	Females.
Lip, tongue, jaw	105	15
Pharynx and œsophagus	79	18
Stomach and liver	283	223
Intestinal (not rectum)	132	135
Rectum and anus	107	60
Uterus, ovary, vulva	—	206
Breast	2	184
All sites	1010	994

the localisation of the primary growth when death occurs from cancer. For instance, if several years after a successful operation for cancer of the tongue or mamma (i.e., successful in the sense of no recurrence in the same site) a patient dies of cancer of the liver or some other internal organ, in what proportion of such cases is the primary site of cancer stated in the death certificate? It is hoped that this is usually done, as it ought to be always; but is this view consistent with probabilities; and if not, what is the unknown margin of error? On the individual answer to this question must depend the weight attaching to consideration of death statistics for cancer of various sites. We regard as extremely important the statistics of localised cancer published in the Registrar-General's Review, and trust they will be continued, for every year they will tend to approximate more closely to the natural history of each certified death from cancer. Notwithstanding the inevitable doubt expressed above, Table XLV. on p. 69 of the Review is intensely interesting. In the table of death-rates from cancer we give an incomplete summary of its larger items.

The table, and still more the fuller table from which it has been extracted, is pregnant with suggestions

FIG. 6.



Relative (not actual) death-rates from cancer of the tongue and syphilitic diseases, the death-rate for each of these in the year 1900 being taken as 100.

for further research, and invites immediate speculation—which may lead to research—as to the causation of the extraordinary sex differences in the incidence of fatal cancer. Why this excess of cancer of the mouth in men? Is it due to their lower standard of oral hygiene? Is it due to smoking or to the drinking of strong alcoholic spirits, or to syphilis? To this point we return later. Does a similar explanation apply to the excessive male cancer mortality of the pharynx and stomach. Or do other indulgences of the table explain the difference? The possible relation of uterine cancer to avoidable traumatism in child-bearing necessarily arises, and the fact that mammary cancer is increasing unlike uterine cancer calls for separate investigation.

Preceding remarks have a bearing on a diagram on p. 72 of the Review displaying a most suggestive comparison between the course in recent years of mortality from cancer of the tongue and from syphilis. In Fig. 6 the course of the death-rate from cancer of the tongue and that for the death-rate from the diseases which collectively give a fair index of fatal syphilis in the community are compared. In each case we have reduced the death-rates to a relative amount, each death-rate being given in proportion to the initial item stated as 100. The earlier part of the cancer curve shows a rapid increase in the death-rate from cancer of the tongue without any evidence of relation to the syphilitic death-rate. This may or may not indicate increasing accuracy in certification of the original site of cancer, or it may or may not mean an actual increase of cancer of this site, or both. The second half of the two curves from 1914 onwards displays a suggestive parallelism, though the Review is most cautious in deprecating premature pronouncement on this point. The general course of the curves shows that with decreased syphilis has gone decreased cancer of the tongue (as certified in death-returns) and confirms the wide pathological impression that there is a causal relation between the injury produced by earlier syphilitic lesions and later cancerous changes. As pointed out in the Review, "decrease of syphilis is not the only influence making for decrease of lingual cancer known to have been operative during the last few years." Among other influences may be mentioned improved dental care.

The continuing increase in the death-rate recorded from cancer of the breast is intriguing. In 1901–10 it averaged 158, in 1911–20 it was 171, and in 1926 it had increased to 184 per million of population (standardised). But in the period under comparison operations on mammary cancer have become more drastic and complete, and the real increase in mammary cancer may be greater than the figures display, for two reasons: more patients completely recover than in the past, and if the interval between operation and recurrence in another part of the body has increased, there is a greater likelihood that the medical certifier omits the mamma in his death certificate. But, on the other hand, such omission of primary breast cancer when death is directly due to an internal cancer was even more likely in the earlier years of registration, as is clearly shown in the parallel case of the decline in mortality from cancer of the liver. Who shall decide? We are left with an increased sense of the necessary limitations of massed statistics of cause of death when one attempts refinements of localisation of disease.

THE RETIREMENT OF DR. E. C. THOMPSON.—The committee of management of Tyrone County Hospital has accepted, with regret, the resignation of Dr. Edward Charles Thompson, who was appointed surgeon to the hospital in March, 1875. He succeeded his father, who had held the appointment for 40 years, making a total, for father and son, of 93 years' service. Dr. Thompson, who early in life received the Albert Medal and the St. John's Medal for bravery in saving life on land, sat in Parliament as a Constitutional Nationalist for North Monaghan from 1900 to 1906. He was formerly President of the North of Ireland Branch of the British Medical Association.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

The Incidence of Leprosy.

KNOWLEDGE of the incidence of leprosy in I is dependent on the 1921 census figures which collected by untrained enumerators and are avow inaccurate. These figures, while they give very idea of the total number of lepers in India, are u as indicating the relative incidence in diff provinces and districts. With a view to the colle of more accurate information an experimental su of selected areas was instituted which has brough light such facts and figures as to carry convi of the necessity of continuing it at least to the e 1928. The survey was begun experimentally in Manbhum district of Bihar and Orissa, the Manb and Raghunathpur *thanas* being surveyed. Ther Onda and Gangajalghati *thanas* of the Ban district of Bengal were surveyed; thereafter t areas in the Sonthal Parganas, and the end of year found the survey party in the Chin Hill Burma. In the first three districts the inciden leprosy was found to be between four and five t that given by the census figures, but it canno claimed that even this survey has revealed the t incidence. The important advance made in treatment of leprosy is the adoption of potas iodide, the effect of which has been known for a time, although the reactions caused by ordinary c in the best known types of leprosy had led to its b considered dangerous. Clinical and pathological s at the Calcutta School has led to a classificatio certain types and phases of leprosy which benefit iodide. The full significance of the survey may be in the report of the Indian Council of the Br Empire Leprosy Relief Association, which has appeared.

Street Watering and Disease.

A prominent public health authority has a drawn attention to the dangers associated with indiscriminate use of unfiltered water for sprayin streets of Calcutta. The water that is used for spra is drawn from the most polluted portion of the ri it is practically raw sewage. When the silt th thrown on the streets along with the water is n dry, and before it is sterilised by the sun, it is scatt all over the city by the wind. The dust teems microbes and is undoubtedly a potent caus eye, throat, ear, and nose ailments in the city. also responsible for many cases of septic pneum Until the unfiltered water-supply is stopped and filtered water used Calcutta will remain a cit which respiratory complaints flourish.

Malaria Problem in Bombay City.

That malaria has become much more w diffused in Bombay within the last 15 years is keynote of a report presented recently by the Go ment malariologist to the Bombay Corporation. disease is still prevalent to a serious extent in southern part of the city, due chiefly to the presen unprotected wells; but the most intense malar the present time is in the vicinity of the mills, especially in the Worli section. In certain areas 30 to 70 per cent. of the children examined have sh evidence of malarial infection. It is possible there is more endemic malaria in Bombay at present time than there was in 1911. Apart fro effect on the health of the population and on infant mortality of the city, the disease is the cau very heavy financial loss to the city. There i natural malaria in Bombay, the chief reason bein absence of natural streams. The cause of its p lence in the city is the presence of thousand permanent breeding-places artificially produce man, the most important of which are wells, cist fountains, tanks, water used in building construc leakages from reservoirs, water-pipes, and cellars

hich subsoil water percolates. Preventive measures ıve hitherto failed owing to lack of a unified control antimalarial operations.

Pasteur Institute at Kasauli.

The Government of India has recognised the value the work done by the Pasteur Institute of India at asauli in offering a grant of Rs.1,14,500 towards on-recurring expenditure besides increasing the nual grant by Rs.10,000. To this offer, however, as attached a provision that this financial help would e given only in case the Institute raised an equivalent nount from other sources, which may be a difficult sk. In the meantime rebuilding is urgent. The aharajah of Dholpur has offered Rs.12,000 towards e provision of electric lighting.

Daylight Saving in Burma.

Among the items for discussion at the forthcoming ssion of the Burma Legislative Council is the aylight Saving Bill, which is unique in India. The oposal is similar to the Summer Time Act in England namely, that from Sept. 1st until April 1st all ocks should be advanced an hour and all business rried on according to the new time.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Medical Civil Service.

THE standards of the public health service in nerican municipalities still leave much to be desired. a recent survey made by a committee of the nerican Public Health Association it was found at among 1281 State, county, and city health icers, listed by the U.S. Public Health Service up the beginning of this year, only 29 had a degree public health. In 1926 only 104 degrees in public alth were granted in our Universities, whereas has been estimated that the needs of the country a whole require that 570 health officers should be ined each year. It is obvious that men are not racted by the profession. Probably the outnding reason for this is the insecurity of tenure public health office. It will be remembered how e president of the association recently lost his ice in Chicago on purely political grounds. In 6 cities investigated it was found that in less than per cent. was the office regulated by civil service. out one-quarter of these cities appoint their alth officers for a term of not more than two years, s than half of them make the appointment "indefie, or at the pleasure of the appointing body." As result of these conditions applicants must either excessively devoted to public service or very lly in need of employment before they are willing accept office.

Criticism of the B.C.G. Vaccine.

S. A. Petroff and Arnold Branch, of the Trudeau natorium, as a result of a very thorough search of literature and of their own laboratory experiments h B.C.G. vaccine, come to the conclusion that vatchful waiting is the best position at present in erence to the vaccination of infants." Contrary the findings of many European workers, these nerican workers do not find the vaccine constantly ocuous to small laboratory animals. In two itances they were able to demonstrate generalised erculosis by direct inoculation into guinea-pigs al in one other instance tuberculosis was established er the second animal passage. Noticing that when .G. was grown on fluid media there appeared two es of colonies, the Trudeau workers became picious of the existence of variants similar to those erved in the reproduction of other acid-fast anisms. A small amount of culture received ectly from Calmette was triturated in salt solution, ered through two layers of Whatman paper No. 5, and plated on a gentian-violet medium. After six weeks there appeared two morphologically distinct types of colonies. A comprehensive study of the biology of these two types is to be published shortly. Suffice it to report here that while the type christened "R" always produces some tubercles which in time heal, the type they have named "S" invariably produces progressive disease terminating in the death of the guinea-pig. As regards the reports of successful infant inoculation in Europe they criticise especially the lack of adequate control. They would like to see a series of thoroughly controlled experiments in cattle and on a large scale.

International Congress of Mental Hygiene.

The first International Congress of Mental Hygiene, it is announced, will be held in Washington in the spring of 1930. The meeting was to have been held in 1929, but has been postponed in order to secure greater coöperation with psychiatric associations in this country. It is believed at present that a large and representative attendance of American psychiatrists is now assured. Information on the progress of the plans for the conference may be had by writing to the general secretary, Mr. Clifford W. Beers, 370, Seventh Avenue, New York City.

Small-pox in 1927.

For the fifth year in succession the United States reported more small-pox cases than any other country except India, a total of 38,498 cases for 1927 as against 33,343 cases in 1926. There were, however, only 135 deaths. The New York State Department of Health has been commendably thorough in obtaining vaccination histories for every one of the 368 cases reported in their jurisdiction. Analysis shows that not a single case occurred among those vaccinated successfully during the last seven years; 31 cases occurred among those vaccinated more than seven years previously, and the remaining 337 among individuals who have never been successfully vaccinated.

The Ethics of Pay Clinics.

The Medical Society of the County of New York recently appointed a special committee to inquire into the relation between the pay clinic (for people able to contribute towards the cost of the service rendered) of Cornell University and the practising members of the profession. The committee reports in part as follows:—

1. The welfare of the public must be the first consideration of a medical problem, the economic difficulties of the physician being of secondary importance. 2. The Cornell Pay Clinic was a decided departure from the prevailing type of dispensary: (*a*) in that an attempt was made to charge fees that would make the clinic self-supporting; (*b*) in that a diagnostic group clinic was formed for persons of moderate means. 3. There is at present in New York no other dispensary which excludes the indigent poor and to which the person of moderate means may go and have a thorough diagnostic study within his capacity to pay. Less than 20 per cent. of the work of the Cornell Pay Clinic is diagnostic. Over 80 per cent. is devoted to the routine treatment of patients. The clinic is thus in active competition with physicians who earn their living.

The committee concludes that the Cornell Clinic does not actually violate any State law; it does not object to Cornell holding a diagnostic clinic for teaching purposes, provided such a clinic is subsidised by the University, but it is opposed on principle to pay clinics for treatment under all circumstances. Counsel for the Society is instructed to investigate the legal aspects of the situation more thoroughly.

Rocky Mountain Spotted Fever.

Recent investigations into the ætiology and prevention of this disease were reported by Dr. R. R. Parker, of the U.S. Public Health Service, to the Fourth International Congress of Entomology now being held at Ithica, New York. There is a remarkable variation in the case-mortality of this tick-borne disease. In some parts of Montana the fatalities amount to 90 per cent. of the case-incidence,

whereas in the neighbouring State of Idaho the case-mortality has been no higher than 5 per cent. During the last few months, however, the use of a serum has been definitely effective in cutting down the death-rate.

THE GERMAN SICKNESS INSURANCE SYSTEM.*

THIS volume, the latest addition to the valuable series of publications issued by the International Labour Office on the subject of national health insurance, fully maintains the high standard set by its predecessors. It is evidently the fruit of much study and reflection and should be found useful by those who in other countries are grappling with the various problems of sickness insurance. Hitherto the recent experience of compulsory insurance against sickness in the land of its origin has been almost inaccessible to English readers who do not read German, for the two leading books in English on the subject, Mr. Dawson's "Social Insurance in Germany" and Mr. Gibbon's "Medical Benefit in Germany and Denmark," were published in 1912, and much has happened to the German insurance system within the past 16 years. To English readers, therefore, this book makes an especially welcome appearance.

Compulsory insurance against sickness on a national scale in Germany dates from June, 1883, although the principle of compulsion had already been introduced in various parts of the Empire; in Prussia miners had been compulsorily insured since 1854. At first the national scheme applied only to persons employed in certain named occupations, but others were added from time to time, especially by the important Act of 1911, which brought agricultural labourers and domestic servants within the scheme. At the present time the number of insured persons is rather more than 20,000,000, or nearly one-third of the total population. In Germany, insurance is compulsory not only against sickness, but also against invalidity and old age, and against industrial accidents (workmen's compensation). Each of these three forms of insurance is administered by a separate body of organisations; sickness insurance by the sickness funds (*Krankenkassen*), which are self-governing associations of insured persons and contributing employers; invalidity and old age insurance by the local insurance authorities, which are bureaucratic institutions with some representation of insured persons and employers; and accident insurance, to which the employees do not contribute, by mutual associations of employers. Moreover, sickness insurance is not regulated by a single code as in this country; there is a separate body of law for wage-earners, and another for salaried employees, while miners are insured under special Acts which provide a single system of sickness, invalidity, and old age insurance. The whole subject is exceedingly complex and difficult to understand, and Dr. Goldmann and Dr. Grotjahn are to be congratulated on the very considerable measure of success they have achieved in explaining it to the general reader.

Tendencies of Sickness Insurance.

Compulsory sickness insurance appears everywhere to develop on certain broad lines, which may most profitably be studied in Germany, where insurance on a compulsory basis has existed longer than in other countries. First, the proportion of the total population coming under insurance tends continually to increase, partly by the inclusion of additional occupations, but chiefly by the extension of insura benefits to the dependents of the insured pers This extension has made great progress in Germ since the war, and it is now estimated that in addi to the 20 million insured persons there are ne 19 million dependents for whom benefits are avail under the sickness insurance system, the total nun forming more than three-fifths of the whole pop tion. Secondly, cash benefits have become relati less important than benefits in kind—medical tr ment, &c. Experience has shown that it is n economical to provide the treatment necessary restore working capacity than to provide the disa worker with money to use at his own discret Consequently, the range of treatment provided by sickness funds has greatly increased. Thirdly rapidly increasing activity is being displayed in field of prevention.

Range of Treatment.

Treatment is given on a scale that is surpri to the English reader. The insured person Germany is not only entitled to the services general practitioner, as in this country, but he also provided for him the whole range of mo therapeutic measures—specialist services, inclu electro-physical, balneological, and orthopædic tr ment, and treatment and maintenance in sanatori and other residential institutions. Treatment ma given by arrangement between the sickness f and outside institutions, but in many cases the fu make direct provision in their own institutions. General Local Sickness Fund of Hamburg has institutes for artificial sunlight therapy and a l orthopædic institute for making appliances, w in 1925 there were made 5424 trusses, 16,305 flat-supports, 3352 abdominal belts, and nearly 18,000 o articles. In 1924 no less than 19,906 X ray exam tions were made in the institute of the Associa of Berlin Sickness Funds, and 13,715 in the Insti of the Dresden Local Sickness Fund. Diagn facilities are provided on a large scale. The Insti of the Association of the Berlin Sickness Fu contains chemical, pathological, bacteriological, serological departments, and makes between 5000 6000 examinations monthly. In 1924 it was sulted by about 3000 insurance doctors in Be In-patient hospital treatment is usually provide arrangement with institutions established by communes or voluntary organisations, but s funds have established hospitals of their own; miners' funds have 21 hospitals with 3970 beds.

Dental treatment is given on a rapidly increa scale. There are some 8000 dentists in Germ and about 6000 are employed by the sickness fu The average expenditure on dental treatment member by the funds rose from M.0·50 in 191 M.2·35 in 1925. In the Hamburg funds the ave expenditure in the latter year was M.3·72 per mem

Preventive Work of the Sickness Funds.

In recent years there has been a remark development of the preventive side of sick insurance. For instance, special attention is give maternity and child welfare. The statutory mate benefits, which are provided for both insured their dependents, include (1) attendance by a mid and, if necessary, medical attendance; (2) a lump payment of M.10; (3) a weekly payment during four weeks preceding and the six weeks follo confinement; and (4) an additional weekly payment during 12 weeks after confinement to t mothers who nurse their babies. The funds tribute to the communal maternity and child we centres, and some have established centres of t own, which are widely consulted; the centre of Erfurt Sickness Fund is consulted by nearly 80 cent. of the mothers of the area. Dr. Goldmann Dr. Grotjahn think that the effort put forth in direction is still inadequate, but there seems no d that an enormous amount of good work is b

* Benefits of the German Sickness Insurance System. By Franz Goldmann, M.D., and Alfred Grotjahn, M.D. International Labour Office. Studies and Reports, Series M (Social Insurance), No. 8. Published in the United Kingdom for the International Labour Office by P. S. King and Son. 1928. Pp. 188. 4s.

e. The funds participate in welfare work among ool-children, they contribute towards the provision country homes, forest schools, open-air baths, ies, &c. Some funds maintain their own country itutions; the Sonneberg Fund has its own forest ool, where the children have facilities for sun hs, swimming, gymnastics, &c. Contributions are le towards school meals; in 1925 the Cologne ds contributed 45 per cent. of the cost of the ls provided by the municipality for school-dren. Many funds provide orthopædic gymnastics the children of the members.

n the antituberculosis campaign the lead, so far he insurance organisations are concerned, has been en by the invalidity insurance institutions, but sickness funds are now taking an active part in work. The facilities they afford for free medical mination, with various kinds of specialist assist-e, tend to the early detection of the disease, and sick visitors of the funds encourage the members seek medical advice when disease is suspected. funds contribute largely to the maintenance of atoriums and dispensaries and some have estab-ed institutions of their own. What is regarded an important health measure, especially in this nexion, is the provision of convalescent treatment recuperation in country convalescent and holiday nes, forest camps, &c., particularly for young kers newly exposed to the stress of economic oloyment. The funds participate in the anti-hol and antivenereal movements, and a system compulsory notification of venereal disease, with ervision of the patients, has been instituted by a nber of the funds. Much health propaganda is ried out by such means as the distribution of phlets and periodicals, the organisation of lec-es, health exhibitions, films, plays, &c. The tral Union of German Sickness Funds publishes nonthly health journal which has a circulation of rly half a million. The first German "Health ek" was organised jointly in 1925 by the muni-ality of Berlin and the sickness funds, and this was owed in 1926 by a "National Health Week" ely owing to the efforts of the funds.

The Sickness Funds and the Medical Profession.

he extensive range of the medical services vided by the sickness funds brings them into e relation with the great body of the medical fession in Germany. It is estimated that about 00 doctors, or 80 per cent. of the whole profession, k for the funds, and that for the great majority work forms the chief source of their income. Goldmann and Dr. Grotjahn estimate that more n half of all incomes from medical practices in many is derived from sickness insurance. The em of employment of doctors and the methods amount of remuneration differ widely amongst various funds, but the system of free choice of or, which is one of the basic demands of the ession, appears to be making headway. Before the funds were practically autonomous in ing arrangements with the doctors, but in that provisions were introduced into the Federal rance Code to regulate the doctors' contracts, so certain conditions of service are common to the le country. The funds, however, still possess a iderable measure of autonomy.

Some Criticisms of the German System.

he German sickness insurance system is a derful achievement in the field of social reform, as the authors of this volume do not hesitate to t out, it is by no means free from defects. The of the funds appears to be imperfectly dinated with the health work of other agencies there is much overlapping and duplication of t, which could be avoided by improvements in nisation. Again, the system has not succeeded in ning the vitally important object of securing onious relations between the administrative bodies and the medical profession, and our authors think that no real improvement may be expected until something like the British system is adopted under which the local arrangements with the doctors are made by an insurance committee on which the local medical profession is represented.

The utility of this volume to the foreign reader would have been enhanced if the authors had included a preliminary account of the general framework of the German social insurance system, explaining the organisation of the different agencies concerned in the various forms of insurance, their relation to each other and to the local authorities and the State. Certain technical terms—e.g., "basic wage"—might usefully have been defined and explained and the statistics brought to a later date than 1925, when for the most part they end. And the medical reader would have welcomed fuller information on the subject of the relation of the funds to the doctors, the nature of the problems that have arisen in that connexion, and the progress that is being made towards their solution. These, however, are but minor criticisms of an important work of sterling value and utility.

MEDICINE AND THE LAW.

Dangerous Drugs Legislation.

THE *London Gazette* of August 17th gave notice that the Dangerous Drugs Act of 1925 will come into force on Sept. 25th, 1928, that being the date when the International Opium Covention signed at Geneva in February, 1925, begins to operate. The notification will recall to our readers the abrupt termination of the proceedings against Colonel Kynaston, when counsel for the Crown admitted in the Court of Criminal Appeal that the Act of 1925 (cited, possibly unnecessarily, in the framing of the charges in that case) was not yet operative. The proceedings consequently resembled, as the Lord Chief Justice remarked, the pulling of a bell-rope when there was no bell at the other end. The Geneva Convention of 1925 provided (by Article 8) that, if the Health Committee of the League of Nations, after having submitted the question for advice and report to the Permanent Committee of the Office International d'Hygiène Publique in Paris, found that any preparation containing any of the narcotics referred to in Chapter III. of the Convention—i.e., drugs to which Part III. of our Dangerous Drugs Act, 1920, as amended, applies—could not give rise to the drug habit on account of the medicaments with which those narcotics are compounded and which in practice preclude the recovery of the said drugs, then the Health Committee should communicate the finding to the parties to the Convention and thereupon the provisions of the Convention should not apply to the preparation concerned. Our 1925 Act was passed to give effect to the Geneva Convention. The resultant changes in our dangerous drugs legislation are these: Part I. of our Dangerous Drugs Act of 1920 (regulating dealings in raw opium and restricting its import and export) is extended to coca leaves, Indian hemp, and resins obtained from Indian hemp, and all preparations of which such resins form the base. "Coca leaves" and "Indian hemp" are specially defined. Section 2 of the 1920 Act enacted that nobody should export raw opium from the United Kingdom except under licence and from approved ports, *and except in packages marked in the prescribed manner with an indication of the contents thereof.* The italicised words now cease to have effect. The 1925 Act also substitutes a new definition of the drugs to which Part III. of the 1920 Act applies, and a new definition of "medicinal opium." Finally, it authorises the making of Orders in Council excluding preparations from Part III. of the 1920 Act where there has been a finding under Article 8 of the Geneva Convention as already described.

Another notification in the same *Gazette* announces that Part III. of the Act of 1920 is henceforth to apply to benzoyl-morphine, dihydro-oxycodeinone, dihydrocodeinone, and their respective salts, and to any preparation, admixture, and extract containing benzoyl-morphine, dihydro-oxycodeinone, and dihydrocodeinone. This Order in Council is made under Section 8 Subsection (2) of the 1920 Act, whereby His Majesty may apply Part III. to any drug whatever, if it appears that such drug is or is likely to be productive, if improperly used, of ill-effects substantially like those produced by morphine or cocaine.

TUBERCULOSIS IN IRELAND.

(FROM OUR OWN CORRESPONDENT.)

SOME of the communications made to the Congress of the Royal Institute of Public Health held recently in Dublin give interesting information on the subject of tuberculosis in the Irish Free State. Sir William Thompson, formerly Registrar-General of Ireland, showed slides exhibiting the death-rates from tuberculosis in England and Wales, Scotland, and Ireland from 1904 to 1926. The rate for England and Wales had decreased from 1·75 per 1000 living in 1904 to 0·95 in 1926; for Scotland from 2·25 to 1·00; and in Ireland from 2·85 to 1·45. In 1912 tuberculosis came first on the list of causes of death in Ireland with 9400 deaths; in 1926 it came fourth with a little under 7200 deaths. It was generally agreed, Sir William added, that there were eight people suffering from tuberculosis for each death, and one might conclude, therefore, that there were some 16,000 fewer people suffering from tuberculosis than in 1912. Somewhat different figures were given by Mr. E. P. McCarron, Secretary of the Department of Local Government and Public Health. Contrasting the years 1912 and 1927, he found that in the area now comprised in the Irish Free State the number of deaths from tuberculosis in 1912 exceeded those in 1927 by 2600. If both writers are correct then there would appear to be a slight increase in the number of deaths in the area of Northern Ireland. Mr. McCarron added that in respect of the operation during last year of 19 of the approved tuberculosis schemes in the Irish Free State, 1536 tuberculous patients were made fit to resume their ordinary life. He gave these figures as an illustration of the value of wise expenditure in the preservation of the public health. "The blunderer with an axe at public expenditure was a menace to all that was best in our civilisation."

Mr. J. H. Norris, Director of Veterinary Research, Department of Lands and Agriculture, Irish Free State, gave valuable information as to the extent of tuberculosis among cattle in the Irish Free State. There were, he said, no complete or even extensive statistics bearing on the incidence of tuberculosis in dairy cattle in the Irish Free State, but from results of tuberculin tests carried out in various herds it might be assumed that at least 20 per cent. were tuberculous. This evidence was supported by separate statistics kept at the Dublin abattoir. During 1926 23·69 per cent. of cows slaughtered were found to be tuberculous, but of these only 3·17 per cent. showed lesions extensive enough to call for total destruction of the carcass. Only 6·52 of bullocks and 5·59 of heifers were found affected. For some time past mixed samples of milk from herds in various parts of the country had been examined at the Department of Agriculture's veterinary laboratory. Up to June 30th last 391 samples from different herds, containing 3884 cows, or an average of 10 cows in each herd, had been dealt with. All samples, in addition to microscopic examination, were submitted to the biological test, with the result that 18, or 4·60 per cent., were found to contain tubercle bacilli. Positive cases were followed up and dealt with under the Tuberculosis Order.

Correspondence.

"Audi alteram partem."

SMOOTH AND ROUGH VARIANTS OF BACTERIA.

To the Editor of THE LANCET.

SIR,—On the whole I concur in Dr. Arkwrig criticisms, in THE LANCET of August 11th, of letter in the previous number. Especially w I support him in the quest for biological genera tions, without which clear thinking becomes imposs I therefore deeply regret my letter conveyed impression to the contrary. Moreover, the except to such "laws" are of prime importance since often furnish a clue to the relationships betw bacterial races. Doubtless, also, it would lead to confusion had the terms "rough" and "smoo been reserved for the contrasted antigenic and o characters as originally described by Dr. Arkwri Unfortunately, smooth and rough are every words, which so aptly point the antithesis betw two widely distributed types of colony appearance consistence that it is difficult to resist using t for this purpose. The strains of parasites ter *C. diphtheriæ* in my letter, were, in the vast majo of cases, isolated from separate hosts, or the s host at different times; only a few strains derived from a common parent strain during t laboratory existence. Surgeon-Commander Pa only describes the laboratory side of the investigat referred to. The work was an attempt to find what variations took place in certain "non-speci characters of a group of bacteria all of which enough "specific" characters to satisfy my con of *C. diphtheriæ*. The results indicated that du their existence in their natural habitat, the hu throat, this group varied widely in compositio different times and places. As Dr. Arkwright t points out, any value this work may have dep on the meaning given to *C. diphtheriæ*. Perha brief attempt to explain what I do mean may slight extent indicate the relationship between species-concept and variation as applied to bact I believe it to be unwise at the present time to d too rigidly any bacterial species. As a working h thesis an organism must have certain stable definite criteria before it is assigned to a " ventional type species." As facts accumulate it be found advisable to add or subtract criteria these which determine the "type species," in c to exclude or include certain strains of bacteria. example, in the Greenwich investigations a bacte had to possess the following attributes before it diagnosed as *C. diphtheriæ*. The organism ferment glucose but not saccharose, grow aerobi on congulated serum without liquefying it, and non-chromogenic colonies. Smears from culture suitable age on solid serum had to show Gram-posi Neisser-positive, pleomorphic bacilli. It is evi from Dr. Arkwright's letter, that although I *feel* the above definition is the most practicable to round, yet he *feels* some reference to toxin produc is essential in order to identify an organism *C. diphtheriæ*—i.e., should a culture of an organ otherwise qualified for inclusion in the species, pro no diphtheria toxin, it must be known that ancestors were toxigenic before it can be na *C. diphtheriæ*. It may be taken as now defin established that many toxigenic races of *C. theriæ* are able to throw off avirulent variants. B this was generally accepted, many bacteriolo considered that *all* avirulent bacilli were sp distinct from virulent diphtheria bacilli. Such opinion is no longer tenable, and even if there sh be "pure lines" of bacilli, possessing the cri given above, whose ancestors never have and w

cendants never will produce diphtheria toxin, re is no means, so far as I know, of distinguishing m from other races similar in all respects except t their recent ancestors were known to have been igenic—i.e., to have possessed a different antigenic ke up. As the word indicates, antigenic characters a parasite imply reactions in the host and hence are paramount importance in medicine. In spite of s fact, it is debatable if antigenic qualities are in eral sufficiently stable for differentiation of pecies," however useful they may be in describing species, types, races, varieties, and special strains hin the species.

For these reasons I personally dislike including any erence to toxigenicity in the description of *C. diphiæ* as a "species"; but the subject is full of iculties of which this correspondence is only able give a hint. However, Dr. Arkwright's letter strates clearly one point of practical importance—t, until there is a universally used standard terial nomenclature, where an author refers to a division of the bacteria, he must take care that s possible for others to understand exactly what he ans. I plead guilty to not having done so in my vious letter.

I am, Sir, yours faithfully,

SHELDON F. DUDLEY.

oyal Naval College, Greenwich, S.E., August 11th, 1928.

'APWORTH COLONY AND SANATORIUM TREATMENT.

To the Editor of THE LANCET.

IR,—Several daily papers represented at the recent blin Congress have been devoting leading articles the above; and, so far as they help Dr. Varrier-es's cause, they will do nothing but good. Unfor-ately, however, they give the impression that atorium treatment has been a failure, a statement ch is at most a half-truth, and much to be deplored. he immediate results of sanatorium treatment are risingly good; favourable cases are restored to lth, and many unfavourable ones are much roved. In the most favourable, the good results permanent; but, unfortunately, four-fifths of se applying for treatment have already passed most favourable stage, or for other reasons are likely to make a complete recovery, whatever treatment. In such cases the results of sana-um treatment are conditional, and relapses happen he quarters are unsatisfactory, the conditions of are unhealthy, or the rules learnt in the sana-um forgotten or ignored. To blame the methods reatment because the after-conditions are not sfied is not logical. One of these after-conditions he possibility of earning an adequate wage under thy conditions. Another is to permit of rest he open-air if symptoms arise which call for it. s a great merit of Dr. Varrier-Jones's arrange-ts at Papworth that these three essentials are rided. His methods are not a substitute for torium methods (for there is no substitute), they are a valuable extension. Many of his ates have had some treatment in a sanatorium; any of them receives a similar treatment in the ny whenever he needs it.

rom the earliest days of sanatorium propaganda as clearly stated that the sanatorium is only one —though an essential one—in the chain of treat-t. So long as the fear of infection prevents the torium patient from obtaining remunerative loyment under suitable conditions, the need for nies like Papworth, or for special workshops as cated by the late Dr. F. S. Tinker, will be urgent; they are not, and cannot be, a substitute for the torium, which combines advantages in the same as a hospital for other ailments.

I am, Sir, yours faithfully,

F. R. WALTERS.

rnham, Surrey, August 25th, 1928.

THE LATER RESULTS OF PARTIAL GASTRECTOMY FOR GASTRIC AND DUODENAL ULCER.

To the Editor of THE LANCET.

SIR,—A study of the figures relating to chronic gastric and duodenal ulcer given by Mr. Norman Lake in his paper on the "Later Results of Partial Gastrectomy" in THE LANCET of August 11th shows that (1) gastro-enterostomy was *unsatisfactory in 36 per cent.* of 61 cases, but there was no mortality; (2) partial gastrectomy was unsatisfactory in only 2·5 per cent. of 51 cases, but there was a *mortality of 9 per cent.* (5 out of 56), which is greater than the risk of malignant degeneration.

These are the "later" results, but experience shows that the "last" results—i.e., after an interval of ten years or more instead of five years or less, would give a much greater number of unsatisfactory results, especially in view of the fact that Mr. Lake allows his patients to eat whatever they like. In the German and American clinics, in which partial gastrectomy has been the routine surgical treatment of ulcer for ten years, so many anastomotic ulcers have followed the operations recommended by Mr. Lake that nothing less than excision of four-fifths of the stomach is now performed. This would presumably have a still higher mortality, and we shall have to wait another ten years before we know how often it is followed by jejunal ulcer. Then I expect complete gastrectomy will become the operation of choice, for nothing short of this will produce achylia, as Klein has shown that when the secretion of appetite juice is stimulated by tasting or seeing food, but nothing is swallowed, free acid appears in the small portion of the stomach still remaining after subtotal gastrectomy.

It is clear that, *if* Mr. Lake's results can be taken as typical: (1) gastro-enterostomy is unjustifiable except for pyloric obstruction because of the 36 per cent. unsatisfactory results; and (2) partial gastrectomy is unjustifiable because of the high mortality.

An interesting commentary on Mr. Lake's paper is the fact that since 1921 we have had at New Lodge Clinic 37 patients suffering from gastric ulcer, 165 from duodenal ulcer, and no less than 67 from the ill-results of gastro-enterostomy or partial gastrectomy, performed in most instances for ulcer. Our experience shows that gastro-enterostomy is the commonest gastric disorder to-day, and undoing gastro-enterostomies is the gastric operation we now most frequently recommend.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, August 15th, 1928.

To the Editor of THE LANCET.

SIR,—I have read with interest Mr. Lake's paper published in your issue of August 11th; there is a good deal in it, however, which does not coincide with my own experience. An extensive inquiry into the after-results of a short-circuiting operation for duodenal ulcer show that these are at least as good as those following any surgical procedure in the abdomen. I am not concerned here with the respective merits of gastro-duodenostomy and gastro-jejunostomy; and for the sake of convenience will hereafter refer to both as gastro-enterostomy.

I am sure that surgeons who are constantly and fully carrying out the technique involved in the operation of gastro-enterostomy will regard Mr. Lake's figure of 36 per cent. unsatisfactory results as much too high. Indeed, such a figure is undoubtedly a very strong reason for seeking some other operative procedure. In my experience the unsatisfactory results are not more than 10 per cent., and in many of these the symptoms are so slight and evanescent that the cases should be included under Mr. Lake's heading of "satisfactory." Again, it is not clear on reading this paper how many gastrectomies were done for duodenal ulcer and how

many for gastric ulcer. It is essential to differentiate, for in many respects the two diseases are very unlike. The type of patient is not the same, gastric ulcer makes the patient much more ill as a rule, and duodenal ulcer is virtually never the precursor of malignant disease. It is a debatable point as to how often carcinoma becomes grafted on to gastric ulcer, but I think most surgeons allow that it happens sufficiently often to cause the possibility of any such change to pass through their minds on most of the occasions on which they deal with a gastric ulcer. The difference between the two types of ulcer (or perhaps one should say the types of patient) has a vital bearing on the statistics of anastomotic ulcer following gastrectomy. I have seen three cases where such an ulcer had formed after partial gastrectomy had been done for jejunal ulcer in which gastro-enterostomy had been done previously for duodenal ulcer; I have Sir Berkeley Moynihan's permission to say that he has had 12 such cases sent to him, and that he has never seen an anastomotic ulcer develop after a primary gastrectomy for gastric ulcer. Mr. Lake's explanation, that too little of the stomach was removed (that is to say, not all of the acid secreting part) does not apply to these cases.

Because of the difficulty of dealing directly with ulcers on the posterior surface of the duodenum, eroding the pancreas and causing marked deformity, I should regard these as the ulcers to be treated by gastrectomy, if this operation were ever necessary for duodenal ulcer; but gastro-enterostomy is very successful in these cases and the mortality is less than 1 per cent. I venture to say that in a series of this type gastrectomy would show a very much bigger mortality, and I presume this is the kind of ulcer Mr. Pannett has in mind when he finds it necessary to insert in his book on gastro-duodenal ulceration some paragraphs dealing with injury to the bile and pancreatic ducts as a complication which is observed in a certain percentage of cases of resection.

It is a great mistake to think that having performed the operation of gastro-enterostomy the business is finished. It is essential to deal with the ulcer itself at the time, and to treat the patient medically for long afterwards. I would suggest that the failure to take these two points into consideration in compiling statistics goes far to explain the high figures of unsatisfactory results sometimes given. This does not condemn gastro-enterostomy, or show the necessity to substitute gastrectomy; it is a reflection on the vision of the surgeon, for after all there is, or may be, still an ulcer present, and the operation only goes part of the way in promoting the patient's complete recovery.

I think if Mr. Lake could show that gastro-enterostomy gave the high percentage of unsatisfactory results which he quotes, in spite of a full measure of complementary treatment before, at, and after the operation, he would convince his readers that there were sound grounds for advocating gastrectomy for duodenal ulcer—even though it is followed by a higher mortality, and carries with it the risk of anastomotic ulceration, a risk which may prove to be as great as that after gastro-enterostomy, if no more.—I am, Sir, yours faithfully,

E. R. FLINT, F.R.C.S. Eng.

Leeds, August 15th, 1928.

THE HEART AND CIRCULATION IN BERI-BERI.

To the Editor of THE LANCET.

SIR,—May I refer Dr. Sutherland to the *Dublin Journal of Medical Science* for October, 1916, in which I draw attention to the negative pressure existing in the pericardium of a healthy person, and its tendency to disappear from the pericardia of persons in ill-health, especially those with serous effusion in the large cavities. This negative pressure results in a suction action whereby the pericardial fluid is kept at an equal thickness all over the surface of the heart and acts as a support to the working organ. A removal of that support affects the weaker-w right ventricle at an earlier stage than the left. I suggested the formula $F=(P+I)\div(T+S)$ w F=fibrillation, P=pressure, I=impulses, T=t and S=support; from which it is easy to see if tone or support or both be diminished the tend to fibrillation is increased. In beri-beri effusion oc into the serous cavities, the general feebleness of circulation implies that tone is less, conseque heart failure sets in. Prof. Wenckebach sug the existence of a law of circulatory correla between the right and left heart, working along si mechanical lines. Does my formula help him in contention?

I am, Sir, yours faithfully,

G. ARBOUR STEPHENS,

Consulting Cardiologist, King Edward VII. We National Memorial.

Swansea, August 18th, 1928.

THE VITAMIN A CONTENT OF COD-LIVE OILS.

To the Editor of THE LANCET.

SIR,—In your issue of June 30th (p. 1353) J. C. Drummond attempts to counter statem made in an article published in the *Anglo-Norw Trade Journal* for May, 1928, which is based information which I have given the editor of journal. Drummond's reply does not touch the crux of the matter, and is therefore unsatisfac As previous articles regarding this matter appeared some years ago, a short résumé is neces

1. In 1924 Prof. Drummond (University Co London), jointly with Dr. S. S. Zilva (the I Institute, London) and Dr. Graham (The Fish Laboratory, Lowestoft), published in the *Bioche Journal* (1924, XVIII., 178) a paper entitled: Relation of the Vitamin A Potency of the Live to the Sexual Condition and Age of the Cod this very searching work they particularly tr the question whether the spawning of the cod any influence on the vitamin content of the Repeatedly, and in a most definite way, it is s in the article referred to that no such influence be demonstrated. For example: regarding results of the four series of tests of cod from I borough and Scarborough during the montl January to June, it is stated that "even the oils from spent cod in March fish, which must spawned just before being caught, and which no time to recuperate, did not deviate in po from the oils of fish before spawning, and se months after spawning and consequently recuperation." The paper ends up with the follo summary: "The sexual condition and age o cod do not influence the vitamin A potency o liver oil." In 1924 I myself carried out si investigations, and came to the same conclusion in view of the paper in the *Biochemical Jour* considered any publication of my findings superfl

2. In 1925 Prof. Drummond published in LANCET (Sept. 26th, p. 679) a paper in which, wi producing any fresh data, he says, with rega oils produced in the important fishing distri Lofoten (Norway), that during spawning th becomes poor in vitamins and contains only one- to one-fifth of the vitamin potency of that from other places (Finmarken and Newfound where the fisheries do not take place durin spawning period. The reason apparently being when the fish "are practically starving durin spawning period, and are at the same time transf much fat and vitamin to the reproductive cell livers yield an almost white oil of relatively potency." This is exactly opposite to the fi of Prof. Drummond and his collaborators in about the fish in this condition it is here said "the relative potency of the residual liver however, not effected."

Drummond's paper of 1925 has during these years ved as the basis for an exceedingly intense vertising of Newfoundland cod-liver oil, at the pense of the Norwegian oil and at great economic s to the latter.

3. It was not until several months later that I came aware of Drummond's article in THE LANCET Sept. 26th, 1925, and I thereupon wrote a rejoinder ich appeared in your issue of Feb. 6th, 1926 320). Therein I expressed surprise that the Prof. ummond of 1925 should contradict the Prof. ummond (and his colleagues) of 1924. My paper s couched in the most moderate terms. I sent a py of it to Drummond, and although it appeared cessary that he should furnish some explanation, sent me no answer.

4. On the other hand, a reply was made by . Zilva, who had previously collaborated with of. Drummond. This reply is now made use of such a way by Drummond in your issue of June 30th 1353) that the reader who has not kept fully in ich with developments may get the impression that va supported Drummond. I do not believe others l agree with this interpretation. Zilva's reply ves nothing to be desired in the way of explicitness :

> As I did not see Prof. Drummond's article until it peared in print I do not hold myself responsible for rything stated therein. Prof. Poulsson is quite right asserting that the sexual condition of the cod during wning has no bearing upon the activity of the oil, as shown by my colleagues and myself, and I feel gratified t this work has been confirmed by our Norwegian eague."

Prof. Drummond must be in a most unhappy frame mind when he accepts this severe correction hout a word of protest.

t appeared inevitable that Prof. Drummond should this juncture explain himself, but no such explana- n has been made, not even in his last letter. tead of explaining upon what basis in 1925 he ies results achieved by himself and his colleagues 1924, he devotes a lot of space to treating other jects not relevant to the present issue. For mple, a comparison is made between the biological l colorimetric tests, obviously in order to get an portunity to point out that my tests of certain ples of cod-liver oil had been carried out according a defective method. In this connexion I will tent myself with pointing out that these assays l partly been completed already in 1923; the proved and now applicable method was described Steenbock in 1924.

ummarising the above, we find ourselves faced h an instance of an author contradicting himself l his colleagues without communicating with them e of them subsequently denying responsibility), hout producing new data, and without offering explanation. A situation of this kind is paralleled in scientific discussion, and the situation by no means clarified by Drummond's last letter, ept in so far as he has now abandoned the con- tion which formed the chief basis of his paper in E LANCET of Sept. 26th, 1925—namely, that the ual condition of the cod during the spawning od influences the vitamin content of the liver

I am, Sir, yours faithfully,

slo. E. POULSSON.

INSTRUCTION IN PSYCHIATRY.

To the Editor of THE LANCET.

SIR,—I should like in the first place to thank you for the kindly notice of my book on "Mental Disorders" in your issue of July 21st. My object in writing to you now is to comment on Dr. Estelle Cole's letter in your issue of August 11th. I hope that your review will be approved not only by "many of the older school of psychiatry," but also by those of some at least of the newer schools who realise the inadequate condition of much of modern psychological teaching regarding, for example, the psychoneuroses. So long as such a short period of time is allotted in the medical curriculum for the teaching of psychiatry in general, it seems to me that it would be unwise to employ more than a modicum of it in dealing with contentious psychological matters. When there is something approaching a settled doctrine I shall be only too glad to set it forth for those students and others who may care to read what I write. In conclusion, I find myself in complete agreement with what you say in your note that "so important and difficult a subject should be properly taught or left alone." It seems to me that there is a good deal of modern pseudo-psychology—or pseudo-psychopathology—which is not properly taught, but which is improperly practised.

I am, Sir, yours faithfully,

Wimereux, August 20th, 1928. HUBERT J. NORMAN.

"FUSSING OVER CANCER."

To the Editor of THE LANCET.

SIR,—Your correspondent "D.P.H.," in the course of an excellent letter, remarks that it is really a truism to say that "the earlier cancer is detected the better are the patient's chances of recovery." Having made this uncontroversial statement, he goes on to ask: "Why is there a certain hesitancy . . . in launching educational campaigns with regard to cancer?" and the inference would seem to be that "cancer campaigns throughout the world" have neglected this very useful part of what should be one of their primary activities. In order to attempt to prevent this inference being accepted as the whole truth of the matter, may I be allowed to draw the attention of your readers to some of the educational work undertaken by the Yorkshire Council of the British Empire Cancer Campaign?

Shortly after the Yorkshire Council was created, our leader, Sir Berkeley Moynihan, recognising that the education of the public was of prime importance, proposed that a propaganda subcommittee should be formed and financed. This was done, and the funds placed at its disposal were considerable in amount and were mainly derived from donations given by Insurance and Panel committees in the County. This subcommittee has done a great deal of work. It has issued a very comprehensive little book entitled "Notes on Cancer," prepared under the direction of the Medical and Scientific Committee of the Yorkshire Council. Free copies of this book have been sent to all practitioners in the county and many have been sent, by request, to almost all parts of the Empire. Any practitioner requiring the book may have it on application to our Secretary, at 47, Park-square, Leeds. The subcommittee has organised several courses of post-graduate lectures to practitioners by eminent authorities, the list of lecturers including the names of such well-known men as Sir Berkeley Moynihan, Prof. G. E. Gask, Prof. Grey Turner, Dr. Major Greenwood, and Prof. Sampson Handley. Most of these lectures have been very largely attended, and there is a demand for further courses which the subcommittee hopes shortly to be able to meet.

Having, in the above ways, attempted to assist practitioners by placing before them the latest available information, the subcommittee directed its attention to an effort to educate the public. It first succeeded in obtaining the services of a competent woman doctor who was well fitted to place facts before individuals which it felt they ought to know. It then organised a series of public demonstrations, called—for want of a better name—"cancer exhibitions." Each exhibition visits a selected town and is open to the public for, usually, one week. Various statistics, showing the number of deaths arising from cancer in different parts of the body are exhibited in graphical form. Large quantities of leaflets are used and visitors urged to take them home and show them to their friends. Information

on various questions of health is given. Lectures by medical men and women of standing are delivered, and each day a local doctor gives a short talk, emphasising the necessity for early advice and treatment in all cases where the disease may be suspected. The woman demonstrator has personal interviews with visitors throughout each day and the burthen of her story is: "If you have anything wrong—or if you *fear* you have anything wrong—don't go on anxiously worrying, but consult your doctor and ask him to examine you and advise." These exhibitions have been attended by marked success. Thousands of people have visited them, and excellent reports of the lectures and addresses have been given in the public press. They are not easy to organise, for the difficulty in making them attractive to the public, whilst at the same time excluding all "gruesome" details is a very real one. None the less the subcommittee is very satisfied with the results. The deplorable experience of Dr. Stanley Reimann, as given in "D.P.H.'s" letter, has not been ours! When our work began I think most lay people agreed that a diagnosis of cancer—no matter where situated or how early or late it had been recognised—was tantamount to a sentence of death. This is not so now. The facts that some 50,000 people die annually from cancer in England and Wales; that getting on for 20,000 of these cases originally arise from superficial—and therefore get-at-able areas; that an enormous percentage of early cases have been shown by fully confirmed hospital reports to be alive 10 years after treatment, constitute, when proclaimed, a "message of hope" which the public is not slow in appreciating. Evidence supplied by surgeons and general practitioners in our county convinces us of this.

The fears of "frightening people to death," of "creating a nation of neurasthenics," do not impress the members of our Council. Our leader's happy phrase—"frightening them to *life*"—appeals to us more strongly, and it is a long time since I read so excellently logical an exposure of the futility of commonly used objections as that given in the letter of "D.P.H."

I am, Sir, yours faithfully,

G. B. HILLMAN,

Chairman, Medical Propaganda Subcommittee, Yorkshire Council, British Empire Cancer Campaign.

Wakefield, August 18th, 1928.

OSTEOCLASTOMA.

To the Editor of THE LANCET.

SIR,—I should be much obliged if you will correct an error which appears in THE LANCET of July 28th (p. 183) in the report of the proceedings of the recent International Conference on Cancer. In the discussion on bone sarcoma I spoke in favour of the view that the so-called giant-celled tumour or myeloid sarcoma is derived from the fibrous-tissue framework of bone and that the giant cells are osteoclastic (not osteoblastic) in nature. Osteoclastoma (not osteoblastoma) was suggested as a better name for this tumour than any of those at present in use, combining, as it does, brevity with precision of meaning.

I am, Sir, yours faithfully,

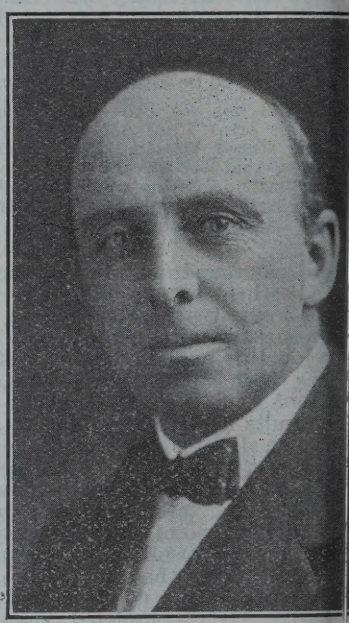
Leeds, August 15th, 1928. M. J. STEWART.

PAYMENT FOR MOTOR ACCIDENT PATIENTS.—The governors of Folkestone Royal Victoria Hospital last week adopted the following resolution: "In cases provisionally admitted by the resident medical officer or by the matron for immediate treatment which has become obligatory as the result of a motor accident, each patient admitted shall pay for treatment at the rate of 11s. 4*d.* per day, subject, however, to the committee deciding subsequently that these charges be increased, reduced, or remitted." The resolution was the result of correspondence with the Central Bureau of Hospital Information.

Obituary.

WILLIAM SMITH SYME, M.D. EDIN., F.R.F.P.S. GLASG.

Mr. Syme, who died suddenly on August 1 when on a holiday in North Wales, was well kn in Cumberland and south-west Scotland as a speci and writer on diseases of the nose, throat, and Born in Harbour Grace, Newfoundland, in 187 was at an early age sent to school at Blair L and continued his medical studies at Edinbu where he qualified M.B., C.M. in 1891. He went as assistant to Dr. Charles Wilson, of Cr before starting general practice himself at Gamlin Cambs, where he remained till 1902. He had alw enjoyed the life of the country and at that tim joined in the field sports of all kinds, being cap of the cricket team for some years. His return to Scotland was actuated by the desire to develop the more scientific professional side of his work, and after attending the clinics of Dr. Thomas Barr at the Ear Hospital and Dr. J. W. Downie at the Western Infirmary, and working on the former's staff, he decided to specialise in ear, nose and throat work, and in 1904 began consulting work in this specialty in Carlisle, and some years later in Dumfries. In 1913 the course at the Western Me School was recognised by the University; in Mr. Syme was appointed surgeon to the Ear, and Throat Hospital, and three years later to Nose and Throat Western Infirmary. In the year he became lecturer on diseases of the th later adding appointments and a lectureship in surgery to his other duties.



MR. W. S. SYME.

Photo by Annan, G

Mr. Syme was one of the founders of the Sco Otological and Laryngological Society, and for n years its hon. secretary and treasurer. He w ready and accurate writer on clinical subjects most considerable literary work being a hand for students and practitioners, published in 192 which a new edition has recently appeared. aim in this book was especially to stimulate interest of students in a subject likely to co them very closely, immediately on entering ge practice. His oral teaching will be missed by Gla students who found in him the embodiment of g humoured energy, and one who always showe active interest in athletics, while the nursing were pleasantly aware of the uniform kindness courtesy with which he treated both patients and relatives. His devotion to duty and the heavy of detailed professional work are regarded by friends as contributory to his early death. Few

said, held such a place in the esteem and affection heir colleagues.

Ir. Syme married in 1895 a daughter of Thomas sley, J.P., of Greysouthen, Cumberland, and is rived by his wife, two sons, and four daughters.

MARY LAUCHLINE McNEILL, M.B. GLASG.

EWS has been received from Kamali, Africa, of death of Dr. Mary McNeill, on June 10th, from hoid fever at Jinga Hospital. Dr. McNeill was n in 1874 at Holm in the Orkney Islands, eldest ghter of the Rev. Daniel McNeill, M.D. She went school at Fochabers, studied music and languages Germany and Switzerland, and later became a lical student at Queen Margaret College, Glasgow, re she graduated in 1905. She then returned to ney and practised there until 1914, when she t to Leicester to relieve her brother for service n the R.A.M.C. In 1916 Dr. McNeill held the ointment of resident physician in the Leicester er Hospital for several months until she joined staff of the Scottish Women's Hospital in Salonika. remained there until early in 1919, when moved with the hospital to Belgrade. In the mn of the same year she went to Tiberias in stine to the U.F. Medical Mission under Dr. ance, and thence to the Central Provinces, India, l 1921. After a short holiday at home she became ember of the Church of Rome and joined the olic African Mission, first at Kampala, Uganda; rly she worked single-handed with three Frann Sisters at a remote station in Kamali. She looking forward to coming home on leave in ember.

of. A. L. McIlroy writes: "Those who knew Mary McNeill loved her for her upright character, unselfish life, and her devotion to her family. mysticism and joy in living was a source of ler to her friends. She took a great interest in ature and art, and had a most marked gift for ng and for poetry. She was a loyal colleague, always upheld the administration of those under n she worked. Dr. McNeill never lost her hful interest in people and places. She had elled extensively, had absorbed new ideas and e friends wherever she journeyed. Her passing eft a great gap in the hearts of her friends."

YAL MEDICAL BENEVOLENT FUND.—At the last ng of the Committee 50 applications for assistance considered and £825 5*s.* voted to 45 cases. Considera- f the following notes on a few of the applicants helped how how sad some of the cases are and how urgent is eed of help, yet unfortunately the grant was small. und appeals for subscriptions to enable it to make more ate grants. Subscriptions and donations should be o the hon. treasurer, 11, Chandos-street, Cavendish e, W. 1.

.C.S. Edin., aged 74, married; wife aged 72. The husband pletely broken down in health and is quite unfit to do any f work. This old couple have a total income of £82 a year, up of Old Age Pension £52 and Epsom Pension £30. As ent is £26, there remains only £56 for food and clothes. £40, thus raising their income to £122 a year.

., aged 75, bedridden. Has no private means, but was earn a little last year from literary work. Voted £40.

ow, aged 80, of M.D. Bedridden and suffers from cerebral iginal attacks, requires nursing day and night. Her only is £50 being rent from a property which she has been to sell. Her two children have done all in their power to ad have contributed £42 a year. Voted £40.

ow, aged 73, of L.R.C.P. On the death of her husband 8 her house was sold and the proceeds went to pay off g debts, leaving the widow only £370 as capital. She ceipt of Old Age Pension. Her relations have given some al assistance this year but cannot continue to do so. £26.

ow, aged 52, of M.B. Since the death of her husband pported herself and her invalid son by taking in paying s but owing to ill-health (diabetes) has been unable to ests during the last 12 months. Her son has a congenital with marked cyanosis. Income during past year was nents £7 10*s.* and from a paying guest £6. Voted £26. nd is trying to get other charities to assist in this very e.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates satisfied the examiners in the undermentioned subjects:—

Surgery.—J. P. Collinson, Sheffield and London Hosp.; H. B. Blaker, St. Mary's Hosp.; E. C. Gross, Guy's Hosp.; I. G. Hardinge, Charing Cross Hosp.; G. L. Johnson, Columbia Univ., U.S.A.; C. K. McCoan, St. Mary's Hosp.; and C. F. C. White, Guy's Hosp.

Medicine.—T. A. Barnabas, Bristol; C. M. Brooks, Durham; J. S. Bury, Manchester; A. E. Gibbs, London Hosp.; K. Girgis, Manchester and Charing Cross Hosp.; I. G. Hardinge, Charing Cross Hosp.; H. H. Jackson, Manchester and Charing Cross Hosp.; G. L. Johnson, Columbia Univ. U.S.A.; H. C. Johnson, Minnesota, U.S.A.; J. H. Johnston and G. L. McDermott, St. Bart.'s Hosp.; M. T. Y. Selim, Liverpool; and H. D. K. Wright, St. Bart.'s Hosp.

Forensic Medicine.—N. Das, London Hosp.; E. C. Gross, Guy's Hosp.; I. G. Hardinge, Charing Cross Hosp.; A. H. Hennessy, Adelaide and London Hosp.; G. L. Johnson, Columbia Univ., U.S.A.; H. C. Johnson and K. R. Lundeberg, Minnesota, U.S.A.; C. P. Madden, St. Bart.'s Hosp.; S. M. Rahman, Calcutta and Middlesex Hosp.; M. T. Y. Selim, Liverpool; and H. D. K. Wright, St. Bart.'s Hosp.

Midwifery.—C. M. Brooks, Durham; H. C. Clifford-Smith, Charing Cross Hosp.; W. A. A. Collington, Guy's Hosp.; J. P. Collinson, Sheffield and London Hosp.; F. W. Crossley-Holland, St. Bart.'s Hosp.; L. P. Gregory, Bristol; I. G. Hardinge, Charing Cross Hosp.; A. H. Hennessy, Adelaide and London Hosp.; G. L. Johnson, Columbia Univ., U.S.A.; H. C. Johnson and K. R. Lundeberg, Minnesota, U.S.A.; R. Perkins, St. Bart.'s Hosp.; and T. A. P. Proctor, Birmingham.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: H. B. Blaker, H. C. Clifford-Smith, J. P. Collinson, I. G. Hardinge, A. H. Hennessy, G. L. Johnson, G. L. McDermott, S. M. Rahman, M. T. Y. Selim, and H. D. K. Wright.

DERMATITIS AMONG BAKERS.—At the Eighteenth Annual Congress of the Amalgamated Union of Operative Bakers and Confectioners held at Cardiff on August 20th, attention was called by the general secretary of the union (Mr. W. Anfield) to the alarming spread of dermatitis among bakers throughout the country. He asserted that there is a conspiracy of silence on the part of men suffering from the disease and also on the part of their employers. He believed that for every one man reported to be suffering from this disease there were three others unreported. It was suggested that since 1918 and 1919 something had been introduced into the raw material used by bakers which had caused a greater spread of this disease, and that the sole sufferers are the operative bakers. A resolution was passed stating that the conference viewed with alarm the spread of dermatitis among members of the union, and urged the Executive Committee to spare no expense in the matter, and to call for the assistance of the Government department together with the Master Bakers' Association and the millers and the medical profession.

THE LONDON HOSPITAL.—In 1927 the annual report records there were 16,840 in-patients who stayed, on an average, 15–19 days and cost £11 3*s.* 6*d.* each. New out-patients to the number of 114,509 made 567,525 attendances at a cost of 12*s.* each. The total ordinary income increased from £234,088 to £263,546, while ordinary expenditure fell from £262,900 to £250,419. The year's legacies totalled £51,315, nearly double the average.

CONTRIBUTIONS TO HOSPITALS FROM DOCKERS.—More than 10,000 dockers have agreed in writing to contribute to the Merseyside Voluntary Hospitals Penny-in-the-Pound scheme.—During the year ended on June 30th last Devonport Dockyard and its allied establishments, by means of a similar scheme, raised £5136, making a total for the last five years of £20,891.

MANCHESTER GUARDIANS AND CANCER FUND.—The Manchester board of guardians at its meeting on August 22nd again discussed the guardians' contribution of £1000 to the Lancashire, Cheshire, and North Wales Council of the British Empire Cancer Campaign, as the result of a letter from the Minister of Health intimating his inability to sanction the contribution. It was stated that the Minister was "unable to regard so considerable a donation to a fund of this kind as being within the spirit and intention of Section 36 of the Poor-law Act, 1927." He was, however, prepared to consider favourably applications from the guardians to subscribe reasonable amounts to the funds of the hospitals undertaking the treatment of cancer, in which persons receiving relief from the guardians are having, or are to have, assistance in cases of necessity.

MATERNITY HOSPITAL FOR SOUTHPORT.—The Southport Health Committee has accepted the offer of Miss Christiana Hartley, a former mayor of the town, to build a new maternity hospital. The present building was a temporary soldiers' hospital and last year, out of 1000 births in Southport, 300 took place within it. The new institution will be adjacent to the infirmary and will correspond, in design and material, with its main block.

THE LATE DR. S. W. GRIFFITH.—Samuel Wilbraham Griffith, of the Hermitage, Pwllheli, died suddenly on August 24th, aged 72. He began his medical studies in Dublin and continued them in Edinburgh, where he qualified L.R.C.P. and L.R.C.S. in 1884. He was one of the best-known medical practitioners in North Wales, a J.P. of Carnarvonshire, and senior magistrate of the shire, having officiated in the Pwllheli Court for nearly 40 years.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—This hospital, which has been under construction on its new site in Broad-street, Holborn, since November, 1926, is now completed and will be open for the admission of in-patients on Monday, Sept. 3rd. The out-patient and casualty departments were opened last Easter. In addition to the public wards, there are 14 single private rooms, which will be available in the autumn. The new hospital has cost, including the freehold site, about £150,000, towards which nearly £100,000 has been raised by the sale of the old site in King William-street, Strand, and by public appeal. The remaining £50,000 has yet to be found.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.1.

MONDAY, Sept. 3rd, to Saturday, Sept. 8th.—QUEEN MARY'S HOSPITAL, Stratford, E. Second week of Intensive Course in Medicine, Surgery and the Specialties. Syllabus on application to the Secretary.

Appointments.

BRECHIN, F., M.B., B.Ch. Glasg., D.P.H., has been appointed Medical Officer of Health, Renfrew.

DAVIDSON, M., M.D. Oxf., F.R.C.P. Lond., Consulting Physician to St. Luke's Hospital, Chelsea.

DUNSCOMBE, CLEMENT, M.B., B.Chir. Camb., D.P.H. Oxf., Medical Officer of Health for Mansfield Woodhouse, Notts., and Assistant School Medical Officer, Nottinghamshire County Council.

LOBBAN, G. M. D., M.B., Ch.B. Leeds, Assistant Schools Medical Officer, Oldham.

MITCHELL, L. M. V., M.B., Ch.B. Edin., to be one of the Medical Referees under the Workmen's Compensation Act, 1925, for Inverness (Mainland) District of the Sheriffdom of Inverness, Elgin, and Nairn.

ROWNTREE, S. J., M.R.C.S., L.R.C.P. Lond., Certifying Surgeon under the Factory and Workshop Acts for Islington.

STEVENS, W. G., L.R.C.P., L.R.C.S. Edin., Consultant Medical Officer of Health, Renfrew.

THOMSON, H. W., M.D. Glasg., a Specialist Medical Referee under the Workmen's Compensation Act for Ophthalmic Cases in the Sheriffdom of Lanark.

Surgeons under the Factory and Workshop Acts: BELLIS, T. M.B., Ch.B. Liverp. (Llanfairfechan); BRUCE, D. W. (Chagford, Devon); ELLIS, G. E., M.B., B.S. Lond. (Bourton, Dorset).

Vacancies.

For further information refer to the advertisement columns.

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.

All Saints' Hospital, 49–55, Vauxhall Bridge-road, S.W.—H.S. At rate of £150.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110.

Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.

Brighton Education Committee.—Asst. Sch. M.O. £600.

Cairo, Egyptian University.—Faculty of Medicine: Professor of Forensic Medicine. L.E. 1500. Also Prof. of Clin. Surg., &c.

Canterbury, Kent and Canterbury Hospital.—3rd Res. M.O. At rate of £125.

Cheltenham Borough.—M.O.H. and Sch. M.O. £850.

Chester Royal Infirmary.—H.P. £120.

Croydon General Hospital.—Cas. H.S. £125.

Dorchester, Dorset County Hospital.—H.S. At rate of £120.

Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110.

Eastbourne, Princess Alice Memorial Hospital.—Jun. H.S. At rate of £100.

Exeter, Wonford House.—Deputy Medical Supt.

Hull, City and County of Kingston-upon-Hull.—Asst. M. £600.

Leeds City Hospitals.—1st Asst. Res. M.O. £450.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Lowestoft, St. Luke's Hospital.—Med. Supt. £800.

Manchester, Ancoats Hospital.—H.S. At rate of £100.

Manchester Babies' Hospital, Burnage-lane, Levenshulme.—M.O. At rate of £125.

Manchester, Monsall Hospital for Infectious Diseases.—Se Asst. M.O. Also Jun. M.O. At rate of £375 and respectively.

Manchester, Royal Children's Hospital, Gartside-street.—M.O. At rate of £150.

Manchester, Royal Children's Hospital, Pendlebury.—Res. Officer. At rate of £125.

Metropolitan Ear, Nose and Throat Hospital, Fitzroy-square, H.S. £150.

Miller General Hospital for South-East London, Greenwich-S.E.—Pathologist. £600. Also H.P. At rate of £12

National Hospital for Diseases of the Heart, Westmoreland-s W.—Res. M.O. At rate of £150.

Northampton General Hospital.—H.P., H.S., and two Asst. H Each at rate of £150.

Patna Medical College.—Prof. of Physiology. Rupees 1200.

Plymouth, Homœopathic and General Hospital.—H.S. At ra £100.

Prince of Wales's General Hospital, Tottenham, N.—Anæsthetist. At rate of £120.

Queen Charlotte's Maternity Hospital, Marylebone-road, N. Asst. Res. M.O. At rate of £80.

St. George's Hospital Medical School, S.W.—Pathologist Lecturer in Pathology. £575.

St. Mary's Hospital, W.—Asst. Pathological Chemist. £30

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Ga W.C.—H.S. At rate of £75.

Salford Municipal Maternity Home and Babies' Hospital, Se terrace, Pendleton.—Asst. Maternity and Child W M.O. £600.

Salisbury General Infirmary.—H.S. £150.

Shrewsbury, Royal Salop Infirmary.—Res. H.S. At rate of

Truro, Royal Cornwall Infirmary.—H.S. £170.

Tunbridge Wells and Counties General Hospital.—H.S. £16

Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O.

West London Hospital, Hammersmith-road, W.—H.P. and H.S.'s. Each at rate of £100.

Westminster Hospital, Broad Sanctuary, S.W.—H.S. to Eye, Nose and Throat Depts. At rate of £102.

Wolverhampton and Staffordshire Hosp.—H.S. At rate of £

The Chief Inspector of Factories announces vacant appointn for Certifying Factory Surgeons at Langport (Somerset Aspatria (Cumberland).

The Home Secretary gives notice that in consequence o death of Dr. A. Stuart, Medical Referee under the Work Compensation Act for the Central District of the Sheri of Perth, the appointment held by him is vacant. Ap tions for the post should be addressed to the P Secretary, Scottish Office, Whitehall, London, S.W.1 should reach him not later than Sept. 19th, 1928.

Births, Marriages, and Deat

BIRTHS.

BALTER.—On August 14th, at Avenue-road, N.W., the w David N. Balter, M.D., of a son.

HINGSTON.—On August 20th, at Uplands Cottage, Belv drive, Wimbledon Hill, S.W., the wife of Major H. Hin I.M.S., of a son.

RICHARDS.—On August 15th, at Adelaide-road, N.W., the Noel Olivier, wife of W. Arthur Richards, F.R.C.S., daughter.

RUSSELL.—On August 24th, at "Bredon," Alverstoke, H the wife of Dr. Norman L. Russell, of a son.

SKEGGS.—On August 26th, at Bicknor Lodge, Stevenag wife of Dr. B. Lyndon Skeggs, of a son.

SMALLEY.—On August 21st, the wife of Dr. L. Smalley, Mo Cottage, Kenilworth, of a daughter.

TROTTER.—On August 27th, at "Braemar," Haslemere London, N., the wife of Dr. G. Clark Trotter, M Islington, of a daughter.

MARRIAGES.

SHELDRAKE—LANE.—On August 18th, at the Parish C Leamington Spa, William Donbavand Sheldrake, B.S. Lond., to Ida Frederica Lane, youngest daugh the late Mr. and Mrs. W. Billings Lane, of Botti Lincolnshire.

DEATHS.

GREENWAY.—On August 19th, at Alexandra-drive, Sur Charles Melville Greenway, M.R.C.S., L.R.C.P. (l Plumstead), aged 58.

HUGHES.—On August 23rd, at Bristol, following an oper Frank Percival Hughes, M.B., B.S.

KEBBELL.—On August 8th, at a nursing home, Earl's Charles Frederick Vivian Kebbell, M.R.C.S., L.R.C. his 42nd year.

KHAN.—At Gaya, India, on 20th July, 1928, Major Abdus Khan, I.M.S., from heart failure, aged 46. Deeply mo

MCVINE.—On August 16th, at Hazelwood-lane, N., Dr. McVine.

MOORHOUSE.—On August 17th, at Melville-terrace, St Dr. James Ernest Moorhouse, aged 58 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Noti Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

HOSPITAL LAW.

LIABILITY OF HOSPITALS AND THEIR PROFESSIONAL STAFFS FOR TORTS.*

By Captain J. E. Stone, *M.C.*, F.S.A.A.,
HON. SECRETARY, INCORPORATED ASSOCIATION OF HOSPITAL OFFICERS.

Operations.

No surgical operation can be performed on an adult ient without his or her consent if it is at all possible to ain it. No operation, therefore, should be performed on atient without the express consent of the patient, or if is not in a position to give such consent, then of his rest relative. Further, an operation must not be carried ther than is warranted by the consent, and this consent uld be founded on full knowledge of the nature and sible extent of the operation and the consequences which may involve. Disregard of these precautions may se the operation to be illegal, and to render the surgeon le to an action for damages. In the case of a child similar cautions should be adopted except that instead of the ient's consent, the consent of a parent or guardian uld be obtained. Even in the case of a child, it may advisable to obtain his or her consent as well, especially he child has attained years of discretion, for the power he parent or guardian over the person of the child does extend to the whole period of minority.

When a person has selected a surgeon to operate upon , and has appointed no other person to represent him ing the period of unconsciousness that constitutes a t of such operation, the law will by implication constitute h surgeon the representative of the patient, and will t upon him the responsibility of so acting in the interests he patient that the latter shall receive the full benefit hat professional judgment to which he is legally entitled. surgeon undertook to perform a radical cure of a left uinal hernia, and to do it gratuitously. When the patient anæsthetised and ready for the operation to commence, ore serious rupture was found to exist on the right side. surgeon accordingly dealt with the right hernia first, nding to deal with the left one afterwards. However, the time the first operation was complete, the patient's dition was not so good and the second operation could be commenced. The patient brought an action for ult and was awarded substantial damages; but a higher rt set aside this decision on appeal. The grounds for were that the use of anæsthesia modified the funda- ital common law rule that consent must be given before operation can be performed. Anæsthesia had post- ed to the period of relaxation and unconsciousness the ing of the complete and final diagnosis of the case, by ch time consent could no longer be asked or obtained. se changed conditions are all for the benefit of the ent, and to allow them to be used as the basis of actions assault or *mala praxis* would be contrary to the public rest. It will be noted that the decision is safeguarded language which makes it safe from abuse, and confers iberty upon the surgeon to carry out a more extensive nore dangerous operation than that for which he has ined consent. A record of all professional staff in ndance at operations should be kept.

Who may Bring Action?

he only person who can properly bring an action for ages done to the person of the patient is the patient self, even though a minor; otherwise in all cases of eons retained by any of the public establishments the ent would be without redress, for it could hardly be ected that the governors of a hospital would bring an on against the surgeon employed by them to attend the l of poor parents who may have suffered from his igence and inattention (Pippin and Sheppard). For- y, when a patient died as a result of the negligent treat- t of a doctor or nurse, any right of action which he at have had in his lifetime ceased on the principle of well-known maxim, *Actio personalis moritur cum persona.* the Fatal Accidents Act, 1846, more commonly known "Lord Campbell's Act," and called "an Act for com- ating the families of persons killed by accidents," it enacted that whenever the death of a person shall be ed by wrongful act, neglect or default, such as would eath had not ensued) have entitled the party injured to maintain an action and recover damages, then the person who would have been liable if death had not ensued shall be liable to an action for damages, notwithstanding the death of the person injured, and although the death shall have been caused under such circumstances as amount in law to felony. Such actions must be for the benefit of the wife, husband, parent, or child of the deceased; be brought by his personal representative, and be commenced within 12 calendar months after the death of the deceased. If there is no legal representative, all or any of the persons for whose benefit such action would have been brought may themselves bring the action.

Rights and Obligations of Patients.

Voluntary hospitals are under no legal obligations to admit as patients persons who come to them for treatment. The fact that an institution is charitable is not in itself sufficient to entitle the public at large to demand free treatment, and cases can therefore be refused without any reasons being given. This right to refuse admission is, however, seldom exercised without some adequate ground for refusal, but such refusal would give the rejected applicant no cause of action against the governing body or the admitting officer.

A patient on admission to hospital submits himself to carry out any rules and regulations prescribed by the hospital with a view to enforcing on the part of the patients decent and orderly behaviour and obedience to orders. All hospitals have such rules, and the retention of a patient is conditional upon his observing such of the rules of the hospital as relate to his own conduct. A patient is entitled to expect to be treated with reasonable care and skill; this care, however, is so much and no more than a patient in that hospital would, according to its rules and practice, in the ordinary course receive. For instance, patients cannot complain at being attended by junior medical officers in the intervals of the visits of the physicians and surgeons, or because matters not requiring the personal attention of a qualified practitioner are left to the sister or nurse of the ward, or if in accordance with the ordinary practice of the hospital students or others accompany the physicians on their rounds. A patient so long as he remains in the hospital is bound to submit to the treatment bona fide ordered by the physician, and to its administration at the hands of the nurses or other agents employed by the hospital to carry out the treatment prescribed. A patient cannot be detained or treated against his will. If he does not comply with the rules of the hospital the proper remedy is not compulsion but expulsion. If it is found necessary to use force to a patient who exhibits violence or is insubordinate, the force employed should be reasonable and never be greater than is absolutely necessary.

Summary of Hospital's Position.

A hospital is *not liable* for:—

(*a*) The negligence of surgeons, physicians, nurses, or other officers in the exercise of their professional duties, provided it is shown that in the selection and appointment of such officers due and reasonable care was exercised. This as a practical proposition exonerates hospitals in most suits by patients, for in the ordinary case hospitals do exercise such care. (The exemption from liability does not follow the hospital because it is a charitable institution.)

(*b*) The negligence of a nurse (or other officer) assisting at an operation or in the carrying out of her purely professional duties.

A hospital *is liable* for the negligence of:—

(*a*) Nurses in the course of purely administrative duties over which the board has control.

(*b*) Other officers while under the control of the board.

(*c*) Its professional staff (surgeons, physicians, &c.) in the course of their professional duties, if it has not exercised due and reasonable care in their selection and appointment.

The mere fact that the officers are or are not remunerated is immaterial. The board are under no greater liability to a paying patient than to a non-paying patient.

Liability to Persons other than Patients.

Hospitals are liable for the negligent injury of those who do not bear to the hospital the relationship of patient—that is, those who are not beneficiaries of the hospital and its charitable purpose. In such suits hospitals are held by the law, as are all other concerns and individuals, to the use of due care—that is, such care as a prudent person would under like circumstances exercise, and failing in that would be liable in such damages as would fairly compensate the injured person. While, therefore, hospitals are held by the weight of judicial opinion to be exempt from liability for injuries to the recipients of their charity if they have selected their staffs with due care, no such exemption applies to injuries to others. Even though it has been proved that

* Two previous articles on this subject were published in THE LANCET of April 28th, p. 895, and July 14th, p. 102.

there was due care in the selection of the agents or servants where the relation of patient does not exist, and when the hospital would otherwise be liable, there is no exemption to the hospitals. Hospitals are bound to use ordinary care to have their premises in a reasonably safe condition. Cases coming under this heading would include injuries due to (1) defective lifts, (2) a lift shaft negligently left unprotected, (3) collision with hospital ambulance, (4) defective stairs, (5) falling roof slates or tiles, &c. The absence of reasonable care must, of course, be proved.

This phase of a hospital's liability is not confined to what may be termed strangers—i.e., persons other than patients—but it also includes the employees of the hospital. For instance, injuries suffered by a laundry worker, if not properly instructed in operating the machinery which it was her duty to work, or if caused by insufficient protection or defective condition of the machinery, would give good grounds for maintaining an action against the hospital. The fact that employees receive no money for their services, but only lodging, board, and uniforms, does not defeat their right to bring an action. Nearly all hospitals contract out in respect of their liabilities falling under both the above headings; one or two undertake their own risks by the establishment of insurance funds, into which annual premiums are paid and out of which all accident claims are met.

St. Thomas's Hospital, London, S.E.

"THE WELL OF LONELINSES,"

THE fact that "The Picture of Dorian Gray" is now available in cheap editions, while "The Well of Loneliness" has been withdrawn by Messrs. Jonathan Cape at the request of the Home Secretary, suggests that Miss Radcliffe Hall's book may at some future date be restored to circulation. It is not, of course, comparable in artistic merit with Wilde's work, nor even with Miss Radcliffe Hall's previous novel, but it is an honest attempt to portray the temptations, the emotional conflicts, and the social dilemmas of the homosexual woman. The author has considerable dramatic skill, though her emphasis is sometimes misplaced. The implication that the parents' desire to produce a son may alter the emotional affinities of the daughter born to them is difficult to accept; the origin of abnormal sex attractions cannot be so simply explained. The fallacy of the book lies in the failure to recognise that strong attachments between members of the same sex occur as a phase of normal development. Those who fail to outgrow this phase can be helped to divert their emotions into other channels. If their efforts are ineffectual their life must always be unhappy, for the race is bound to erect such barriers as will discourage the development of affinities dangerous to its existence. This duty is well recognised by Miss Radcliffe Hall. Her book, to which Mr. Havelock Ellis contributes a preface, is certainly not effective as a presentation of the case for social toleration of an abnormal habit of life, nor is there any evidence that the author holds a brief to this end.

JUNGLE AND MALARIA.

THE idea is widespread in the Federated Malay States that jungle causes malaria and that therefore ravines should be cleared of jungle and secondary growth. The Malaria Advisory Board states, however, in its report for 1927, that this is by no means always true, and many instances are known in which severe outbreaks of malaria have been caused by clearing jungle. An emphatic warning has therefore been issued against indiscriminate felling of jungle, and the attention of the public is invited to the following points: (1) If the health of those living close to a jungle-covered ravine is good, on no account do any clearing. (2) If the health is not good, owing to attacks of malaria, search thoroughly for other possible sources of mosquitoes before blaming the jungle. (3) Do not clear a ravine, unless you are prepared to drain and oil it thoroughly. (4) Sometimes jungle is dangerous, but before felling it you should seek the advice of your medical practitioner. The Health Department will be glad to coöperate with him in this important matter.

The Health Department of the F.M.S. states its willingness to coöperate with the local practitioner in coming to a decision.

REPORT OF THE IMPERIAL SOCIAL HYGIENE CONGRESS.

WE have received from the British Social Hygiene Council a copy of the proceedings of the Imperial Social Hygiene Congress held at Caxton Hall from Oct. 3rd to 7th, 1927. The Congress was reported at some length in our columns at the time (see THE LANCET, 1927, ii., 782, 829); and Mr. Neville Chamberlain in a preface expresses a hope that the record will have a wide circulation amongst those who are working to raise the moral and social standards throughout the Empire. The report deals in succession with the imperial, medical, and administrative aspects of social hygiene; a full index makes it possible to rapidly to work recorded in any part of the Empire. report can be obtained from the Council at Carteret H Carteret-street, London, S.W. 1.

NEW PREPARATIONS.

Atophan Balsam (Messrs. Schering, Ltd., 3, Llo avenue, London, E.C. 3. Manufacturers: Schering-K baum A.G. Berlin, N.39).—The use of atophan in facilit the elimination of uric acid in gout and rheumatic affect as well as its value in neuralgia and sciatica, are well kn It is now made in the form of a balsam, being an associ of atophan-amylester 10 per cent., phenyl salicylate 1 cent., and camphor 5 per cent., with a fatty soap The balsam can be used externally either per se or supplement to internal treatment by atophan. Experin have shown that the preparation has high absor qualities, confirmation being given here by the excreti the components into the urine. The use of the prepar is particularly indicated where local and massage treat are required simultaneously. It is put up in collap tubes. About ½ oz. per day is recommended for use, the tubes contain about 1¼ oz.

Zymocide (Messrs. Reed and Carnrick, Jersey City, Agents: Messrs. Coates and Cooper, 41, Great Tower-st London, E.C. 3).—This is described as an antiseptic sisting of eucalyptol, thymol, menthol, methyl salic boric, and benzoic acids with other aromatic ingred and alcohol 20 per cent. by volume. It is non-irritatin non-poisonous, and is intended for use as a general antis where it already enjoys popularity as a vaginal douch a mouth wash. A 25 per cent. solution has been empl for cleansing the eyes following traumatism, and ir treatment of conjunctivitis, blepharitis, catarrh of lacrymal passages and other ocular inflammations. put up in bottles containing 14 fluid ounces.

Robinson's "Patent" Barley in Powder.—Messrs. R Robinson and Co., Ltd., Carrow Works, Norwich, sent us a specimen of their well-known product, used food for infants and for making potable barley wate barley puddings. As a result of suggestions and criti from medical men they have now fixed on the tin, in add to the directions, a table of food recipes specially des for infants. The table gives in parallel columns the a the infant for the first four weeks, and thereafter fo first nine months of its life, and the weight in pounds is recognised as agreeing satisfactorily. Further col give the quantity of the suggested foods and the numb feeds per day in accordance with the age and weigh note on this table of recipes pointing out that infants sh preferably be fed by weight rather than by age gives a which might far more frequently be acted upon by public—viz., that where the weight of an infant doe clearly correspond with the age the medical man shou consulted.

THE BUCKSTON-BROWNE PRIZE.

A CORRESPONDENT asks for details in regard to the Buck Browne prize to which he has found a reference in columns. The prize was founded by Mr. Buckston-Bro to whom the medical profession is indebted for his gene in many directions, in memory of a son who lost his l the war. The interest on a sum of money given fo purpose provides a cheque for £100 and a medal whic given for the best essay on some subject selected b Council of the Harveian Society. The prize is aw every two years, the first award having been made in to the late Mr. Lionel R. Fifield for his essay on new gr of the urinary bladder. An amplification of that exc essay was reviewed in THE LANCET recently.

A BROCHURE ON TEA.

WE have received from the Mazawattee Tea Com Ltd., an illustrated booklet setting out the connexi the company with the history of tea in an interesting ma Figures are given to show the vast increase in import of tea which has been accompanied by the dramatic f prices, the figures really forming a commentary social developments in the United Kingdom during 250 years. The Mazawattee Tea Company in their pam point out that they were the first firm to bring home t public that, as dealt with by experts in the fine a blending, teas grown within the British Empire present all the qualities which made those of China po We do not suppose that anyone who is a real amate China tea would suggest that the blends have all the qua which personally appeal, but the blends are held on ground to have other qualities which form satisfa compensation; anyhow, those of this firm have e their wide reputation.

THE address of the Deutsche Medizinische Wochens is now Berlin W. 30, Viktoria Luise Platz 1.

Ingleby Lectures

ON

SOME RECENT ADVANCES IN OUR KNOWLEDGE OF

CKETS AND ALLIED DISEASES.

Delivered at the University of Birmingham

BY LEONARD G. PARSONS, M.D., F.R.C.P. LOND.,

YSICIAN TO THE CHILDREN'S AND GENERAL HOSPITALS, BIRMINGHAM.

LECTURE II.*

CORDING to most authorities the primary defect ncomplicated human rickets is an impaired rption of phosphorus from the bowel. Findlay the Glasgow School do not accept this view regard defective calcium absorption as the tial factor. To determine which view is the ct one is, however, a matter of extreme diffi-, because the relationship between these two ents in all phases of their metabolism is so ate and reciprocal (Murdoch).

ORS INFLUENCING THE ABSORPTION OF CALCIUM AND PHOSPHORUS FROM THE BOWEL.

cessive amounts of calcium in the diet tend to ase its absorption and retention but to impair phorus retention with the result that consider- amounts of phosphorus are diverted from the to the stools. Conversely, if the phosphorus e diet is excessive, calcium metabolism is un- urably influenced, there is an increase of calcium e fæces, and its excretion in the urine becomes less. retention of one element in the intestine by an ssive amount of the other is best explained by formation of insoluble calcium phosphate. To in the maximum absorption of both elements liet should, therefore, contain amounts of calcium phosphorus sufficient in quality and properly nced, the percentage of calcium being greater that of phosphorus. Both these requirements net if children take one pint of milk daily.

nother important factor in the absorption of um is the presence of certain fats in the dietary their normal absorption from the intestine. nts with a normal fat absorption must take 2 to 6 g. of butter fat per kilo of body-weight nsure the absorption of 0·1 g. of calcium oxide kilo of body-weight. A child fed on a low fat ary may, indeed, show a negative calcium balance. infant whose diet, a milk mixture containing r cent. of fat, contained 0·44 g. of calcium oxide day, showed a percentage absorption of 34; eas when fed for 17 days on a mixture containing per cent. of fat, it showed a negative calcium nce, although the calcium intake was more than e as much as on the previous diet (due to the tion of calcium caseinate). The presence of amounts of unabsorbed fat in the intestine also lead to a negative balance; thus a negative w calcium retention is often found in cœliac ase. Again, in infantile biliary cirrhosis, owing e exclusion of bile from the intestine, fat absorp- is very defective. In one case of this disorder gative calcium balance and in another a low tion was found. (See Table I.)

lfer has produced evidence showing that the rption of calcium only occurs in the upper part e intestinal tract. The solution of the calcium in the food is effected by the acid of the gastric , and absorption proceeds until the acid mixture me and phosphoric acid is rendered alkaline by intestinal secretions, when calcium phosphate is ipitated in insoluble form. It has, therefore, been suggested that an increased acidity in the upper part of the intestinal canal would increase the absorption of calcium. Bergeim maintains that acidity, and especially lactic acid fermentation, increases absorption of calcium, and has shown that lactose largely promotes its absorption, whereas maltose and glucose do so to a much lesser degree if at all. Breast milk contains much less calcium than cow's milk, but it is almost completely absorbed; this, he believes, is the result of a high proportion of lactose and of the acid intestinal reaction in breast-fed infants. My own observations lead me to believe that an increased acidity alone does not necessarily cause increased calcium—although it does produce increased phosphorus—absorption. Thus in the cases of biliary cirrhosis, to which I have referred, large amounts of fatty acid were present in the intestine, yet calcium absorption was very poor, and in one case there was a negative balance.

TABLE I.—*Infantile Atrophy.**

—	Calcium.		Phosphorus.	
	Intake.	Percentage absorbed.	Intake.	Percentage absorbed.
Cow's milk ..	1·04 (31 cases)	45·6	—	—
Lactic acid milk	1·32 (14 cases)	35·4	0·76 (11 cases)	71·3
HCl milk	1·22 (6 cases)	51·6	0·62 (1 case)	85·3
Almata	0·92 (6 cases)	72·5	0·63 (1 case)	46·5
Biliary cirrhosis.				
Cow's milk (M. C.)	0·98	0	1·07	92·1
	1·44	0	1·32	85·7
Lactic acid milk (A. J.)	1·35	13·9	0·66	94·9

* The figures given represent the amounts taken in grammes in 24 hours.

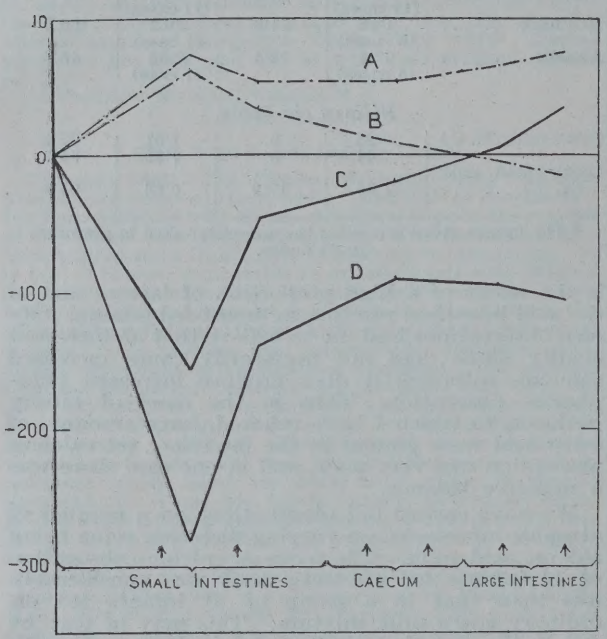
We have carried out observations on a number of atrophic infants fed on varying dietaries, some being fed on acid milk. The average calcium absorption of 14 infants fed on lactic milk was considerably less than that in a group of 31 infants fed on ordinary cow's milk mixture. This may in part be due to the fact that children fed on lactic acid milk excrete more fat than those fed on ordinary milk mixtures. Four children fed on hydrochloric acid milk (prepared by adding one ounce of decinormal hydrochloric acid to four ounces of milk), however, showed a higher absorption of calcium, and although there was a marked increase in the amount of calcium excreted in the urine, the actual calcium retention was definitely higher than in children fed on cow's milk. Finally, a group of six infants fed on Almata, a food which has a buffer value similar to that of breast milk, showed the highest calcium absorption of all the children examined. Increased phosphorus absorption, as the result of increased intestinal acidity from excess of fatty derivatives in the intestine, is to be explained by the formation of large amounts of insoluble calcium soaps so that less calcium is available to bind phosphorus and the latter can be absorbed. (See Table I.)

The absorption of calcium and phosphorus from the bowel can be increased by the oral administration of cod-liver oil, ostelin, irradiated ergosterol, or by exposing the skin to the sun's rays, or by artificial ultra-violet irradiation. Moreover, rats fed on a high-calcium, low-phosphorus, rickets-producing dietary develop a marked alkalinity of the fæces which can be reduced to the acid side of neutrality by any of those methods. Again, the child fed on a low fat dietary, having a low or negative calcium retention, can be made by such methods to absorb calcium well; and in cœliac disease the same results are obtained by irradiation or the administration of irradiated ergosterol in solid form. From all of these considerations it would appear that it is not intestinal

* Lecture I. appeared in THE LANCET of Sept. 1st.

acidity *per se* that is so important in absorption, but the presence of some factor (vitamin D), which directly increases absorption and also produces an acidity, and that the reason why some fats, such as cod-liver oil, are necessary for proper absorption of calcium and phosphorus is that they contain this vitamin.

New light has been shed on the question of calcium and phosphorus absorption by work carried out by Bergeim. Albino rats were fed for 25 days on a high-calcium, low-phosphorus dietary and rickets was produced. They were then divided into two groups; to one group were given ten drops of cod-liver oil daily for five days, to the other, ten drops of olive oil. The animals were then killed and estimations made of calcium and phosphorus in the small intestine, cæcum, and large intestine; the results are seen in the diagram. Both groups of



Average absorption of calcium and phosphorus from intestines of rachitic animals and animals given cod-liver oil. A, cod-liver oil: calcium. B, rickets: calcium. C, cod-liver oil: phosphorus. D, rickets: phosphorus.

animals showed considerable calcium absorption in the small intestine. On this diet, which produces a low phosphorus rickets (the analogue of human rickets), the rachitic condition could not therefore be due to a failure of calcium absorption. In the same area both groups also showed considerable excretion of phosphate—i.e., excretion of phosphate appeared to be an important factor in promoting calcium absorption. In the lower bowel, in the animals receiving cod-liver oil, there was an approximate balance between excretion and absorption of calcium and a high calcium balance resulted. Phosphorus was also reabsorbed so as to bring about a positive balance. In the other group calcium excretion was more marked than absorption, leading to a negative balance; also there was a failure of phosphate to be adequately reabsorbed so as to produce a positive balance. The re-excretion of absorbed calcium into the lower bowel, so that a negative balance results, must be due to the failure of the bones to fix calcium. This failure, as pointed out in the first lecture, is not due to defects in the bone cells but to low blood phosphate, which, in Bergeim's view, is the result of the inability of the tissues of the body to maintain the proper concentration of blood phosphate by breaking down the organic phosphates which they contain. Antirachitic vitamin, he believes, facilitates this action and therefore elevates blood phosphate, and the absorbed calcium is deposited in the bones. The absorbed cal is hence not re-excreted in the lower bowel, phos absorption is unhindered, and the phosphate ba becomes positive. I am not convinced that Berg explanation is correct in all its details, althoug results appear to be incontrovertible. A refe to the diagram shows that, although it would a as if excretion of phosphate favoured calcium ab tion, yet in those animals receiving cod-liver o calcium absorption in the small intestine was h with a smaller excretion of phosphate. Furthe states that in three non-rachitic rats which wer on a milk diet which was high in calcium and phorus "an acid condition generally prev throughout the intestines, due presumably to acid fermentation, and both calcium and phosp were absorbed to a considerable extent in the intestines." Also, if phosphate excretion fa calcium absorption, it is not clear how calcium e tion hinders phosphorus absorption. Indeed, i arguments are correct the reverse process v appear the more logical. It is, I think, much probable that the antirachitic vitamin exert effect by an alteration of the pH of the inte canal rather than by any action such as Be suggests. Reference has already been made t influence of acidity of the intestinal canal o absorption of calcium and phosphorus and t fact that this acidity is largely due to the pre of the antirachitic factor. Recently Red Willimot, and Wokes have estimated the p contents of various sections of the gut of ro by a method similar to that of Bergeim, an curves they obtained on a low fat rachitogenic show that the fæcal alkalinity corresponds well Bergeim's curve of calcium absorption. Admin tion of cod-liver oil or irradiated cholesterol to animals restored the acidity of their intestinal tr

From this review it will be seen that it is a impossible to say which of the two, calcium or phorus absorption, is actually at fault; pro both are, but perhaps on the whole the evi favours the view that defective absorption of phorus is the more important.

TETANY.

Infantile tetany is very closely associated an quently occurs with rickets, in fact, some autho regard it as a nervous manifestation of rickets. cases of infantile tetany the serum calcium is The blood phosphorus may also be low, inde always is so if there are manifest symptoms of ri but the presence of low serum calcium is path monic of infantile tetany and is the one characte sign of the disease. In manifest tetany the ca may fall as low as 6 mg. per cent., and in latent t it is usually about 8 mg. per cent. Now ca exists in the blood in both ionised and un-io forms. The un-ionised form is in part inor as bicarbonate and acid phosphate. Cameron Moorhouse have suggested that the calcium co of the cerebro-spinal fluid, normally 5·3 mg. per may be regarded as the amount of diffusible ca —i.e. the inorganic and ionic calcium. In inf tetany the calcium in the cerebro-spinal fluid is gr reduced and may be entirely absent. From results of experiments on the filterability of the calcium through collodion membranes under a tive pressure, and by means of the Rona-Taka equation, the amount of calcium present as in the blood in small children has been estimat be 2·1 to 3·4 mg. per cent. with an average of 2·6 All the methods of directly determining the an of ionic calcium are open to considerable critic this is unfortunate, because the work of Loeb others has shown that the excitability of the n muscular mechanism depends on the relative centration of the calcium, magnesium, sodium potassium ions, according to the formula: $\frac{Na}{Ca}$ In infantile tetany potassium, magnesium, and so in the serum are all normal, and it is, therefor

calcium which is the determining factor in the t of the disorder.

tany, of the same nature as infantile tetany, occurs in cœliac disease. It may, however, ar without any diminution in blood calcium, as, nstance, in gastric tetany, a condition which may lop when there is continuous vomiting of acid ic contents. This sometimes happens in pyloric sis of infants and is the explanation of the con- ons which occur in that disease, and which times prove fatal. Examination of the blood ich cases reveals that there is a shift of the pH he alkaline side—i.e., an alkalosis—as a result hich less calcium is ionised and tetany results.

uring digestion the blood normally yields acid equiva- especially HCl for the secretion of hydrochloric acid, an excess of basic equivalents is formed. These are diately neutralised by the carbon dioxide of the blood, esult being an increase in the BH CO_3 of the blood. BH CO_3 content again falls, however, one to one and a ours after the meal, as HCl is reabsorbed and replaces CO_3." (Drucker.)

e loss of hydrochloric acid by vomiting and the of reabsorption in pyloric stenosis produces an osis. The occurrence of tetany after large doses carbonate of soda is also due to alkalosis, as is form known as superventilation tetany, which ought about by forced respiration and in which blood calcium is normal. This is undoubtedly ause of the convulsions which are occasionally after rapid respirations in children suffering post-encephalitic respiratory tic. (See Table II.)

TABLE II.—*Varieties of Tetany.*

—	Blood.		
	pH.	Calcium.	Phosphate.
ile	Normal.	Low.	Normal or low.
yroid ..	,,	,,	,, ,, high.
onate ..	Alkaline.	Normal.	Normal.
e	,,	,,	,,
ntilation ..	,,	,,	,,
hate ..	Normal.	Low.	High.

e threshold mechanism of blood calcium (of g. per cent.) appears to be a very delicate one. calcium content can be raised above normal travenous injection of calcium salts, but the s a fleeting one and the extra calcium is soon cted into the alimentary canal and the normal ed. Recently Collip has shown that the para- id glands contain a hormone which raises the calcium. Injection of large doses may produce calcæmia and death, but even using this hormone necessary to repeat the injection frequently to ain the blood calcium above threshold value. tany, as we have seen, blood calcium is diminished, he parathyroid hormone raises it to normal and tetany, although only for a short time unless ose is repeated. It is possible, in animals from the parathyroids have been removed so that a has been produced, not only to cure tetany eans of the hormone but also to produce hyper- mia and death. The parathyroid hormone, er, does not increase the absorption of calcium the bowel, but actually mobilises the fixed m from the bones and other reservoirs, and faction appears to be to maintain the calcium blood at the normal level and to balance the ution of calcium between the tissues and the It is, therefore, useless in the treatment of unless means are also taken to increase calcium tion from the bowel.

must envisage rickets as usually primarily a onal disorder of the intestinal tract whereby n or phosphorus, or both, are not properly ed, either because there is an inefficient supply se elements or because of the absence of vitamin ince this vitamin can act whether supplied the skin by inunction or when taken by the mouth, it seems probable that it acts after absorption from the intestines and not, as suggested by some authorities, by a local action on the intestinal mucous membrane. The injection of cod-liver oil subcutaneously has been stated to have little or no effect on rickets, probably owing to the difficulty in dealing with fat that has not been through the processes of digestion. The antirachitic factor in cod-liver oil has been found to be contained in the unsaponifiable fraction of the oil, and by injecting intramuscularly a concentrate of this active fraction, Wilkins and Kramer produced a cure in two cases of active rickets. This is strong, although not conclusive, evidence that the antirachitic effect of the oral administration of cod-liver oil occurs as a result of absorption of the oil. The absorption of fats containing vitamin D should therefore be essential for the prevention of rickets, or, conversely, a child who is taking a fat-free diet, or who is not absorbing fat properly, should develop rickets. I have already mentioned the effect on the calcium balance of a diet of skimmed milk, and of the presence of large quantities of unabsorbed fat in the intestines, and also the occurrence of xerophthalmia in babies fed on a skim milk dietary.

There are certain conditions in childhood associated with defective fat absorption, of which the most important are severe and lasting jaundice, such as occurs with congenital obliteration of the bile ducts and some forms of cirrhosis of the liver; diarrhœa; cœliac disease. I have never seen xerophthalmia in any of these conditions, but Bloch and Wagner have described its occurrence in association with severe and lasting jaundice. The amount of unabsorbed fat in those forms of icterus is very great, yet, in spite of the fact that these infants have a low or negative calcium balance, they do not develop rickets. The probable explanation of this apparent anomaly is that growth in such conditions is practically inhibited, and in infants where there is no growth, there is no rickets. That these children may, however, develop rickets when growth starts is well illustrated by a case recorded by Bloch.

CŒLIAC RICKETS.

In cœliac disease of long standing all grades of severity of rickets are met with, and here again growth is, I believe, the activating cause. The bone is osteoporotic before any considerable degree of growth occurs, although rickets rarely develops before the age of 7. The child suffering from cœliac disease passes copious stools containing large amounts of undigested fat, for the treatment of which it is necessary to give a low fat dietary and therein lies the reason for the onset of cœliac rickets. Whilst this is correct, the amount of fat absorbed in cœliac disease on a full fat diet is often considerably higher than would be expected on clinical grounds, and very much greater than occurs in chronic jaundice; indeed, on a low fat dietary, such as skimmed protein milk, the absorption may reach the high figure of 94 per cent. Even with the deliberate addition of fat to the diet for short periods, although the amount present in the stool is increased, yet the amount absorbed is considerable and indeed, within limits, the higher the fat intake the greater the amount of fat is absorbed. Any attempt to prevent the onset of rickets by giving cod-liver oil, however, is unsuccessful because, as with any other extra fat, if continued for more than a short period, an increase in the diarrhœa, the size, offensiveness, and fat content of the stool is produced, and the child goes downhill. On the other hand, a low fat dietary improves the clinical condition and as a result growth may occur and rickets develop. Examination of the blood in cœliac rickets usually shows low serum phosphorus and calcium, and the condition can be cured by administration of dry irradiated ergosterol, or cholesterol, or by exposure to the ultra-violet rays. All this is evidence that the disease is due to fat-soluble vitamin deficiency, yet in spite of this xerophthalmia has so far not been reported, although growth is severely stunted. We have, therefore,

in cœliac disease the converse of the condition described by Bloch in infants fed on a skimmed milk dietary. In cœliac disease there is rickets but no xerophthalmia; in dystrophia alipogenetica there is xerophthalmia but no rickets. The explanation of this anomaly seems to be that after the period of infancy the child is more susceptible to a diminution in the supply of D- than of A-vitamin. Rickets occurs in cœliac disease only when the latter is severe and of long standing. It seems that, although as a result of defective fat absorption, normal amounts of vitamin D are not absorbed, yet enough is absorbed to enable the child to obtain sufficient calcium and phosphorus to ossify a fragile osteoporotic bone during the period whilst growth is slow, but that this subnormal absorption of vitamin D is quite insufficient to ossify growing bone, and so rickets results. A low fat dietary seems to ensure a better percentage absorption of fat, and, therefore, probably ensures the absorption of any fat-soluble vitamin that may be present in the diet, but here again the amount of vitamin D is so small as to be totally inadequate when growth occurs. From what has been said it is obvious that I regard the osteoporotic bone as a prerachitic stage, only awaiting a period of growth actually to declare itself as frank rickets.

It is not very unusual to meet with cases of rickets which appear to resist treatment by cod-liver oil but which respond to treatment by light or by the administration of ergosterol. One such case was reported to have been under treatment with cod-liver oil for years, but at the age of 7 was unable to walk because of severe and progressive rickets. Radiograms showed an extreme degree of osteoporosis and a large rachitic metaphysis. Treatment by light and ergosterol has, however, completely healed the bones, and the child is now able to walk. In another case, in spite of a life spent under ideal conditions, most careful dieting and the administration of cod-liver oil, a girl presented, when 3 years old, evidence of rickets of moderate degree, which has increased slowly until her present age of 8 years. There was a history of mild digestive disturbances, and examination of her stools showed a higher fat content than usual, and therein, in my opinion, lies the cause of her rickets, which I believe can be cured by light and ergosterol. Both these children were smaller than normal children of the same age, and although they could not be classed as cases of cœliac disease they are, in my opinion, examples of a subnormal absorption of fat—particularly the fat-soluble vitamin D—extending over a long period of time. Cases of cœliac rickets and those to which I have just referred require treatment for much longer periods than ordinary rickets in order to effect complete cure.

Diarrhœa, another cause of defective fat absorption in childhood, is of little importance in producing rickets because, unless the condition is one of cœliac disease, it is usually only transitory and, indeed, leads to starvation which produces arrest of growth and therefore absence of rickets.

Rickets Occurring as a Result of Defective Excretion

As already pointed out, there does not appear to be any bone disorder associated with defective calcium excretion, but a very different state of affairs exists with defective excretion of phosphate. The latter occurs in chronic interstitial nephritis, a disease which in children produces marked infantilism and not infrequently severe bone deformities ranging from a mild degree of genu valgum to the severest manifestations of rickets—"renal rickets." In these children the defect does not lie in the intake of calcium and phosphorus, nor is it due to the absence of vitamin D, or sunshine, but is purely a defective excretion of phosphate by the kidneys. Examination of the blood reveals nitrogen and phosphate retention, an acidosis, and frequently a high degree of lipæmia. The phosphorus values are often even higher than would appear at first sight, because, although 5 mg. per cent. is the normal concent in infants, many of these children have reach age when the normal blood phosphorus is consid below that figure. Blood calcium in comparis blood phosphorus is always low but in actual va frequently at or above the normal figure of 10–1 per cent., a very different state of affairs that found in azotæmic nephritis of adults and the injection of phosphate into animals or chi

In azotæmic nephritis of adults the highe retention of phosphorus the lower is the calci the serum. Injection of phosphate into anim children raises blood phosphorus, lowers blood ca and in some cases produces tetany. Why, the does not blood calcium become low and tetany in renal rickets? I think the answer may be the increased blood calcium is an effort on the of the child to prevent tetany. Tetany is a s disease, and to prevent it I suggest that the mobilises calcium from the bones, producing porosis and rickets, an action similar to that duced by the injection of parathyroid hormon that suggestion is true, administration of the ho should definitely make renal rickets worse. I case the bone condition was reported by my logist colleague (Dr. Teall) to be worse after ad tration of the hormone, but the variations in the of the rickets are so marked in the ordinary c course of renal rickets that too much impo cannot be attached to this observation. T does not occur in chronic azotæmic nephri adults in spite of the fact that the blood calci diminished; the explanation usually accept that advanced by de Wesselow, that in this of nephritis there is an acidosis and usually a di tion of the bicarbonate content of the plasma, conditions favour an increased ionisation of ca There is, however, another factor of importa explaining the immunity of the adult from t It has been shown that if the blood plasma i jected to ultra-filtration under negative pressure is a considerable diminution in the calcium c of the filtrate in tetany but not in chronic nep In the latter, therefore, the diminution of ca in the plasma is largely due to diminution in diffusible calcium, or, in other words, is chiefl to diminution in calcium bound to protei renal rickets there is no diminution in the ca of the filtrate. Indeed, as would be expected theory is correct, in some cases there is an inc Occasionally, however, tetany does occur in rickets, but so far I have not been able to inves a case. Acidosis occurs in renal rickets, and no does it increase ionisation of calcium, but it washes out calcium from the calcium reservoir presumably from the bones (Ross and Scriver therefore helps to produce rickets.

There are, therefore, two factors which cont to the causation of osteoporosis and rickets in kidney conditions in childhood: (1) some mecha probably a protective one, which keeps the calcium at a higher level than is usual in an azo nephritis; (2) acidosis.

There is, however, a third and much more i tant factor to be considered—namely, the def excretion of phosphorus. It is possible to see r develop in a case of renal infantilism, heal, and relapse. Thus there is produced a flux be healing and relapse, and this can be correlated periods in which the blood-phosphorus waxes wanes. If estimations of blood-urea or non-p nitrogen are made, it is found that the cur phosphorus retention parallels the curve of nit retention. "Renal" infants pass through attacks of uræmia before the final one closes chequered career. Such attacks, I believe, their rickets worse by increasing the disparity be calcium and phosphorus, whereas in the perio improvement the phosphorus may even retu normal limits, with the result that the cal phosphorus ratio becomes normal and the r heals. Contributory factors in this healing

ıed degree of acidosis, and a lessened depressing
of phosphorus on calcium and of the resulting
to call on the calcium reservoirs.
vould also draw attention to the fact that any-
which increases phosphorus absorption from
limentary tract may make the condition worse.
ıite evidence has, I think, been produced by
and myself showing that ultra-violet irradia-
far from ameliorating, actually increases the
tic manifestations. Let me add in passing that
nal rickets we have another illustration of the
of growth in the development of rickets, because
ıose rare cases which survive until the later
s, when the growth period has ceased and the
ıyses joined up, rickets does not occur, although
ɔone is still osteoporotic to some degree and the
ım phosphorus ratio is abnormal.
ɔm what has been said it will be gathered that
ard renal rickets as belonging, like cœliac rickets,
e low calcium category. The occurrence of renal
ts also proves the importance of the calcium-
phorus ratio, since if the calcium-phosphorus
uct were a correct guide it would put these
mities far outside the rachitic range. It may
be asked, therefore, what is the proof that the
ition is rickets? I think no one will question
act that some of the cases show a radiographic
arance absolutely indistinguishable from rickets
"rachitic type"), but, on the other hand, there
radiographic manifestations which we have
l the "woolly," "honeycomb," or "stippled
" which are totally unlike that seen in ordinary
ts. There is another type, which we have called
'atrophic type," which resembles cœliac rickets,
although I have never seen the rachitic change
the atrophic type I think they can do so, just
times we see in uncomplicated rickets a radio-
al picture absolutely identical with the atrophic
and with cœliac rickets. In the "woolly,
led, or honeycomb type" osteoporosis is present,
iaphysis is straight but there is a long metaphysis,
it is in the latter that the severe deformities so
ıcteristic of the condition occur. The meta-
is shows irregular ossification, giving the appear-
of honeycombing, stippling, or woolliness, and
r the periosteum the bone may appear to be
d. The changes do not appear to the same
e in all the long bones. As the change advances
bsence of subperiosteal bone becomes so marked
the end of the bone collapses, and since this
ıce of bone is usually more marked on one side
the other the collapse usually occurs sideways,
the result that the most extreme deformities
ɔroduced. The skull in some cases of this type
s most extraordinary changes, marked stippling
present. In the severest case that I have
ved all trace of inner and outer tables of the
al bones had disappeared and the bone was
thickened, the whole presenting an appearance
inguishable from Paget's disease. Post-mortem
ination of the long bones shows that the woolli-
or stippling is due to the presence of islets of
age deep down in the long metaphysis, and that
ppearance of subperiosteal erosion is also due
mossified cartilage. The metaphysis itself,
ugh long, is not broad and splayed out as in
rachitic type. Although this type cannot be
nised radiographically as due to rickets, and
ɔscopical examination shows that the changes
nt differ from those ordinarily seen in rickets,
roliferative cartilage being much more irregular
broken, yet Prof. Haswell Wilson, who has
ined the sections for me, pronounces them as
tely rachitic in nature—a view also held by
ey.

Conclusion.

ıope that in these lectures I have made clear
recent advances in our knowledge have shown
rickets is a disorder of calcium and phosphorus
metabolism, usually the result of defective
ption of these elements from the bowel; further,
this defective absorption is due either to an inefficient supply of these elements, or of some activating body in the tissue fluids; that this body is probably vitamin D, which in its turn is derived from the alimentary canal, or synthesised by the action of ultra-violet rays on sterols in the skin; but that occasionally the faulty metabolism may be entirely endogenous in origin, as occurs in renal rickets; and finally, that growth is an essential for the development of rickets.

Although rickets existed before Glisson's time it certainly increased markedly after his day, and became almost universal in some grades of urban society, especially in districts like our own Black Country and Glasgow. We must, however, remember that except for the empirical discovery of the curative effects of cod-liver oil some hundred years ago, our knowledge of the disease advanced very little until the last few years. Although there are still many gaps in our complete knowledge of the disorder, recent researches have put us in possession of information that should allow us completely to eradicate all ordinary rickets. Already its incidence and severity are declining, and we can look forward with sure and certain hope to the day, perhaps no further distant than the tercentenary of Glisson's work, when rickets will have become one of that small but increasing number of diseases which possess a great interest for the historian but happily present no terrors of ill-health for the patient and no cause for anxiety on the part of the doctor.

BONE FORMATION AND THE OSTEOBLAST.

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"Quid dicam de ossibus? quae subjecta corpori, mirabiles commissuras habent, et ad stabilitatem aptas, et ad artus finiendos accommodatas, et ad motum, et ad omnem corporis actionem." —*Cicero, De Natura Deorum.*

"Scrape a bone, and its vessels bleed; cut or bore a bone, and its granulations sprout up; break a bone, and it will heal; or cut a piece away, and more bone will readily be produced; burn it, and it dies." —*Charles Bell, Anatomy.*

Cicero and Charles Bell have given pithy descriptions of the marvels of bone, the tissue which, in common with bone-marrow, displays the highest powers of regeneration and repair in the whole human economy. Sir Arthur Keith [1] has recently asked "Quid dicam de ossificatione?" The answer to the problem of ossification has not yet been found, and to review the search for the mode of ossification is to review the history of morbid anatomy. No subject has been attacked more vigorously, no subject has been deserted more frequently. When Monro Secundus and William Hewson were pleading a priority suit, in relation to their discoveries in the lymphatic system, with Benjamin Franklin as assessor, Abernethy said: "All our knowledge of the absorbing vessels has been obtained by fragments, and our future acquisitions must be made in the same manner." This is equally true of bone development. Our knowledge of the histological structure of bone is a memorial to three Englishmen: Clopton Havers (1650–1702), John Howship (d. 1841), and William Sharpey (1802–1880), who are familiarised in the canals, lacunæ, and fibres which bear their names. The bone corpuscles were first described by Purkinje and Deutsch in 1834. The specific terms "osteoblast" and "osteoclast" as applied to cells actively engaged in depositing or absorbing bone respectively were introduced by Gegenbaur and Kölliker and came into general use 60 years ago. It is of interest to note that as early as 1689, just after the invention of the Huyghens eye-piece, Gagliardi, a professor of medicine in Rome, had described certain "claviculi" or "small nails," which are identical with the fibres of Sharpey. Moreover, as Sharpey maintains, the ossification in membrane without the intervening

stage of cartilage formation had been described by Nesbitt in 1736. Coincidently with the slow unfolding of the microscopic structure of bone, the experimental method was pursued by Stephen Hales, Nehemiah Grew, John Belchier, and John Hunter in this country, by Duhamel in Paris, and by Haller in Göttingen. Their methods consisted largely of actual measurements of growing bones and of the feeding of madder to experimental animals. Hales and Grew were activated by the search for vegetable processes in the development of the animal world. The madder experiments of Belchier and Hunter have been repeated on innumerable occasions, the most recent being the work of Prof. Brash,[2] of Birmingham, on the growth of the mandible. It is interesting to note how most modern investigators have failed to appreciate Hunter's description of the sites of deposition of the dye. Hunter [3] insisted on the fact that the whole of the bone was stained by madder, and that the depth of the staining was proportional to the rate of deposition and absorption of the earthy salts.

"But in the full-grown state, it would appear from the circumstances of reddening a *whole* bone by feeding the animal with madder, that a bone, although completely formed, yet is changing its earth, and probably every other part. This effect, however, is much slower than in the growing bone. This would show that the madder does not act as a dye upon the earth which is already deposited in the bone, but only upon that matter which is every day deposited; and as there is a great deal more deposited in a young bone than in an old one in a given time, in the same proportion must it dye sooner than an old one. The new matter that is deposited in an old bone is to make up for the waste that is daily going on in it; but in a very old bone the waste is more than the repair."

This is the first clear expression of the fact that the calcium of the bones is not permanently fixed as a deposit account but can be brought into the circulation as a current account. The recent brilliant work of Collip [4] with parathyroid extract indicates the ease with which the extract can raise the blood calcium to abnormally high values by calling upon the calcium in the bones and muscles.

Grew, Duhamel, and the other botanists regarded bone as the product of the deeper layers of the periosteum, which they regarded as a "cambium" layer, by analogy with the actively proliferating zone of plants. Haller regarded bone as a product of the arteries, which could lay down bone anywhere. Hunter favoured this view, and Sir Arthur Keith [1] has recently attributed to the perithelial cells of the capillaries the power of conversion into osteoblasts. Goodsir, differing from Hunter, believed that the cartilage cells gave rise to "bone-forming corpuscles."

The present-day teaching of the formation of bone in membrane, in cartilage, and in the deep layer of the periosteum represents a consolidation of the views of Sharpey, Kölliker, and Virchow. The source of the osteoblast is, however, still a problem. Stump [5] traces the cartilage cell, the subperiosteal osteoblast, the endochondral osteoblast, the osteoclast, the endothelial cells of the growing capillaries, the primitive blood cells and the "hæmoblasts" to the same young connective tissue cells. This is an extreme statement of the monophyletic origin. Fell,[6] in a study of osteogenesis in the domestic fowl, claims, on the other hand, that the chondroblasts suffer a triple fate. They may give rise to osteoblasts, as described by Ranvier, Retterer, Macewen, and Van der Stricht, or they may give rise to the reticulum of the bone-marrow, or they may degenerate and disappear. Experiments on animals, such as those of Bast, Sullivan, and Geist [7] on the repair of fractured bones, show that the "cambium" layer of the periosteum, the osteogenetic cells lining the Haversian canals, and the cells of the endosteum are all active in the production of new bone. They found that the only site of formation of cartilage in the repair of bones was at the cut edge of the fibrous part of the periosteum. They saw fibrous tissue cells giving rise to cartilage cells. Carey and Zeit,[8] as a result of the study of the ossifying patella in the dog, emphasise the dual origin of the osteoblast depict both osteoblasts arising from the sub thelial mesenchyme cells accompanying the inv blood-vessels, and osteoblasts formed directly the embryonic chondroblasts in the neighbou of the capillaries.

Nerve-supply of Bone.

The problem of the nerve-supply of bone remained in abeyance. The innervation of two tissues of the body which exhibit the gre power of regeneration and repair, bone and its ma still awaits adequate description. Sir G. Thar Quain's Anatomy (tenth edition), mentions the that distinct nerves can be seen entering nutrient foramina of the long bones. D. Goe has studied the influence of the nervous syste bones and joints. She concludes that bone h somatic and a sympathetic innervation by mea medullated and non-medullated nerve-fibres. Nu ous investigators have found that trophic chang bone follow nerve-section, such as loss of size weight, diminution of inorganic material, an growing animals, defective development. Num observations have been recorded upon the infl in bone of nerve lesions and diseases in man. again, especially in leprosy, regressive changes to be the rule. In general, lesions of mixed n produce more bony changes than those of p motor nerves, and irritative lesions of sensory n seem to be the most potent, as in leprosy. Go concludes, on clinical grounds, that there are sp trophic fibres of sympathetic origin passing to b with corresponding spinal centres. A general trolling centre, so it is claimed, is situated in the in the region of the floor of the third ventricle. obvious that there is much room for anato and clinical research in this field, and that the changes of anterior poliomyelitis and tabes do offer abundant material.

Problem of Calcium Metabolism.

The vast literature relating to bone form was admirably summarised by Gideon Wells the Harvey lecture of 1911. Since that date chemistry and the intensive study of the vita have revealed the complexity of the whole pro of calcium metabolism. Wells stated that questions to be answered are:—

1. Why is calcium deposited in the tissues at all?
2. Why is it deposited in some tissues and not in ot
3. How is the calcium carried in the blood?
4. How is it held in the tissues where deposited?
5. Why is the composition of calcified deposits so stant, qualitatively and quantitatively?
6. What are the causes of rickets and osteomalac

These questions still await concise answers. first question involves the whole problem of senes and death. Calcification occurs not only in ce cartilages but also in tumours, such as fibroid granulomata, in the meninges, and in ten ligaments, and arteries. The second question b to mind the fact that the tissues which un calcification in senescence are the tissues v afford examples of vegetative reproduction, wi without mitotic division of nuclei, in relatively b less areas. Cartilage, which most readily unde calcification, is a tissue in which the cells live b imbibition of tissue juice, removed from an a blood-supply. There is undoubtedly a limit t size of the mass of cartilage which any anima grow, just as there is a limit to the size of a granu When the limit of growth is reached certain c cells degenerate and the matrix calcifies or cas Thus in cartilage proliferation, degeneration calcification are closely related to the veget processes of proliferation without specialisati function and without differentiation of struc leading to old age and death of the tissue. O other hand, bone formation is an active pr distinct from calcification. It occurs in the pre of a rich blood-supply and is accompanied by dif tiation of the primitive cells for function, as di

n mere proliferation. In short, bone is a live ue, actively growing or functioning in an area ly endowed with blood. Calcified cartilage is so scent as to be virtually a dead tissue in an area tively poor in blood-supply.

he question of the carriage of calcium in the od has been attacked with great vigour by the nist. Howland, Shipley, and Marriott and mer [11] have stated that bone normally contains lcium phosphate, that different bones of the same vidual have the same inorganic percentage, that ratio of calcium phosphate to calcium carbonate reater in normal than in rachitic bones, and, her, that the bone contains the phosphate and onate of calcium in the same proportion as the m. R. Robison [12] has disagreed with these views has emphasised the significance of the hexose sphoric esters. He states that the osteoblasts the hypertrophic cartilage cells of the growing nal secrete an active phosphatase which, by rolysing the phosphoric esters of the blood, gs about a local increase of the tricalcium phos- te concentration. This concentration exceeds the ubility product of the salt and leads to its deposition he ossifying zone. Howland and his co-workers not favour simple precipitation as the explanation, regard the process as a chemico-physical one, ending on the activity of the living tissue in a lium in which the concentration of calcium and sphate in the serum and tissue juice exceed a ain minimum value. J. B. Collip [4] in Canada, C. P. Stewart and J. H. Percival [13] in this country, e dealt in particular with the changes in serum ium under administration of Collip's parathyroid mone. The diffusible calcium is markedly increased reby. These experiments indicate the ease with ch calcium passes into the blood from bone and er tissues, and this is a brilliant confirmation of nter's precocious statement about the continuous orption and deposition of alkaline earths in old ue as well as in young bone.

Several attempts have been made to imitate in loidal solutions the actual deposition of tricalcium sphate and calcium carbonate. Barillé [14] in nce and J. C. Watt [15] in Canada have come to the clusion that the salts in bone are deposited by activity of the osteoblasts as a secretory phenomenon. Crétin,[16] in particular, has contributed much our knowledge of the staining reaction of bone of the possible conditions of deposition of the ium salts. He regards the actual areas of muscular achment to be of great significance in determining tilage formation and ossification. The sternostoid and trapezius muscles in relation to the vicle and the occipital bone are differentiated ore the cartilage or bone appears. The point cartilage formation and of bone formation is ays related to the muscular attachment. The nsportation of phosphorus in combination with ali metals converts the primitive tissue into tilage by producing a modification in the umenoids of the matrix. Whereas cartilage is n in sodium, growth ceases when calcium disturbs equilibrium between phosphate on the one hand sodium and potassium on the other. Calcium bonate is now precipitated, redissolved in the sence of alkalies, and then reprecipitated by sphate in the form of basic phosphate or phosphobonate.

Tissue Culture Experiments.

The results of tissue culture experiments have so far n disappointing. A. Carrel and M. T. Burrows [17] tivated conjugal cartilage as early as 1910, but first detailed experiments were those of Fischer [18] in 1922. He cultivated the cartilage s from the sclera of the chick embryo "in vitro," l found that the cells would not grow in the subnce but would grow on the surface of a clot of sma. In the implant the hyaline substance iefies, the cells migrate, increase in size, and tinue to live. No division of the cells was seen. S. Strangeways [19] succeeded in producing multiplication of the cartilage cells in vitro, with typical mitoses. Policard and Boucharlat [20] implanted periosteum and perichondrium of chicks, but in vitro they gave rise to connective tissue cells without the formation of cartilage or bone. A. O. Wjerinski [21] reports the same results in vitro, though a homoplastic transplant in vivo led to strong mitotic multiplication of the cells of the periosteum and actual conversion into osteoblasts. Thus, so far, osteoblasts have not been grown or propagated in vitro by the technique of tissue culture. This suggests that the osteoblast is a purposively differentiated cell which may easily regress into a fibroblast, but will only redifferentiate in the presence of the blood-borne exudate of a living capillary.

The nerve cell of the young embryo has been grown in tissue culture, but the growth has been localised almost entirely in the axone—i.e., in the part of the cell which was shown capable of growth in the adult by Waller's classical experiments on nerve regeneration. The osteoblast, as Burrows [22] has pointed out for the fully matured lymphocyte, polymorphonuclear leucocyte, and many other mononuclear cells, will not grow in a tissue culture. Neither the nerve cell nor the osteoblast can be propagated. Thus these cells seem to exhibit an extreme degree of differentiation.

R. G. Harrison,[23] in 1914, pointed out that cells will not grow in tissue cultures in clotted plasma unless some form of support is afforded, such as the surface of the cover-glass, the surface of the fluid film, or a framework of spider-web, silk gauze, or cotton-thread. In cultures in which the tissue floats free in a fluid medium no outgrowth occurs and the cell succumbs. This phenomenon whereby a cell in the free rounded stage, devoid of support, is unable to grow was described by Leo Loeb and Fleischer [24] under the name of stereotropism. It involves a most fundamental conception of a skeletal support for the cell, and may account for the failure to grow osteoblasts and fully differentiated blood cells such as lymphocytes. Kidney and liver are grown with ease because of their associated connective tissue stroma. Cartilage cells die when they round up near the epiphysis. Osteoblasts apparently require the support of a connective tissue stroma and the adequate supply of blood-borne substances such as vitamin A and ergusia. Only those animals which have a blood vascular system and a cœlom are able to produce an active osteoblast.

Bone Pathology.

The pathology of bone, like the pathology of the blood-vessels, has been so obscured by diverse classifications and a multitude of strange names that certain simple facts escape observation. Chondrodystrophies, osteochondrites, and osteites have been subdivided without end, and dysostoses, aclasias, and dysclasias have been added thereto. Vrolik's term of "osteogenesis inperfecta" is one of the few safe terms in the pathology of growing bone. H. A. Harris's [25] tentative scheme, as a simple working basis for the analysis of bone growth, serves also as a basis for the interpretation of bone pathology. He states that cartilage grows vegetatively by the imbibition of tissue juice in much the same way as bacteria, yeasts, tumour cells, and granulomata. This vegetative proliferation of the cell is largely under the control of the water-soluble vitamins and of those substances which workers in the realm of tissue culture have designed as "archusia" (M. T. Burrows)[26] or "trephones" (A. Carell).[27] The process of proliferation of the undifferentiated cartilage cell is limited by the size of the mass and by the adequacy of nutrition. When the mass of cartilage reaches a certain limit, as in the case of a granuloma, the cells within the mass become senescent, degenerate, and gradually pass into a resting stage which in many cases leads to death. This process of degeneration is accompanied by calcification of the matrix, and is comparable to the phenomenon of caseation and calcification in a tubercle, gumma, or fibroid, or to hyalinisation and the formation of cell nests in a

carcinoma. Lastly, the propinquity of a rapidly growing capillary system in the bone-marrow brings into the region a new set of factors which lead to tissue differentiation as distinct from cell proliferation. The capillaries of the bone-marrow proceed to remove the dead calcified cartilage as they would proceed to remove any other foreign dead body, such as a caseated granuloma or a ligature. The cells of the calcified cartilage that are not quite dead, but rather in a resting or "spore" stage, respond to the approach of the blood capillaries by active amitotic division to form osteoblasts. Any primitive connective tissue cell in the vicinity of the actively proliferating capillary can give rise to osteoblasts, whether this cell be periosteal, perivascular, or reticular. This process of cell differentiation for function is in part attributable to the arrival in the area, via the blood stream, of fat-soluble blood-borne substances. These fat-soluble, blood-borne substances correspond to the "ergusia" or differentiating, energy-producing substance of Burrows, and to vitamin A proper. The osteoblasts are cells designed for work, not for proliferation, and a failure of ergusia or vitamin A leads to the formation of imperfectly differentiated osteoblasts. The degree of differentiation may be so low that the osteoblast is little more than a fibroblast; it may be more advanced, so that the cells deserve the name of "osteoidoblast," but only in the presence of an adequate supply of the blood-borne vitamin A does one see the fully differentiated osteoblast with deeply staining nucleus and numerous basophilic granules in the cytoplasm. This conception of the vegetative proliferative process in cartilage, in contradistinction to the differentiating and functional process in bone, is not entirely new. Its formulation in terms of archusia and ergusia on the one hand, or in terms of water-soluble and fat-soluble vitamins on the other hand, is but an experimental and clinical statement of a long-established teleological fact. Richard Owen,[28] when Curator of the Royal College of Surgeons of England, said, as far back as 1843:—

> "Organic forms result from the antagonistic working of two principles, of which one brings about a vegetative repetition of structure, while the other, a teleological principle, shapes the living thing to its functions. . . . In every species these two forces are at work, and the extent to which the general polarising or 'vegetative repetition force' is subdued by the teleological is an index of the grade of the species."

Evolution is measured by the extent of the triumph of ergusia and the fat-soluble vitamins over archusia and the water-soluble vitamins.

The term metastatic calcification was applied by Virchow to the occurrence of deposits of calcium salts in abnormal sites. There is hardly a tissue in the body which does not present numerous examples of abnormal calcification, from ganglion cells and skin on the one hand, to kidney, liver, lungs, and gastric mucosa on the other. Most of the cases of calcification occur in an area of senile or necrosed tissue, with a poor blood-supply and a slow lymph stream. There are, however, three marked exceptions, for calcification has been repeatedly reported in the lungs, kidneys, and gastric mucous membrane. These three areas are the sites of excretion or secretion of acid substances, and the tendency to calcification in these areas may be an expression of this fact. Cartilage, when calcifying, stains deeply with basophilic dyes, and has an acid reaction. Wells[29] has stated that the well-known tendency of muscle-fibres to calcify in the vicinity of recent wounds, including laparotomy wounds, may be due to the precipitation of calcium salts by lactic acid, set free by the injury to the muscle-fibres during the process of degeneration. The question whether a site of calcification shall also become a site of bone formation is apparently a question of blood-supply. Tendons, ligaments, the media of arteries and caseating granulomata rarely produce true bone, but muscle, kidney, lung, suprarenal, and tonsil frequently do, by reason of the association of primitive connective tissue cells with a rich capillary network. Cushing and Weed,[30] in their experimental studies on cerebro-spinal fluid of cats, observed numerous instances of calcification and ossification of the arachnoid membrane. Calcification occurred in avascular areas, for the nutrition of the arachnoid is obtained through the cerebro-spinal fluid rather than through the blood stream. On the other hand, every case of true bone formation was vascular and could be attributed to the proliferation of mesothelial cells in a vascularised area, as distinct from the calcification of aged cells in an avascular area. In the aged cadaver of the dissecting-room calcification of the membranes, both dura and arachnoid, is common. True bone formation, on the other hand, is rare.

For a considerable time it was thought that the secret of calcification would be found in the formation of calcium soaps with fatty acids, for the pathologists had described calcification by the formation in degenerating lipomata as early as 1849. The absence of any appreciable amount of calcium soaps from areas of normal calcification has negatived this idea, and the presence of large quantities of calcium soaps in certain stages of the digestion of fat without associated calcification is also against the theory. We seem to be confronted with the need for a new chemical concept. The hydrogen-ion concentration and the salt content must be known not only for the arterial and venous streams but also for the contents of the lymphatics, for the tissue juice, and for the interior of the cell. The varying percentage of calcium which can be absorbed by the cartilage designed for later calcification was shown by Wells.[10] He showed that pieces of epiphyseal cartilage, tracheal cartilage, and costal cartilage absorb decreasing amounts of calcium salts, irrespective of whether the cells in the transplant are alive or dead. Moreover, decalcified bone-grafts are known to be less efficient than normal bone-grafts, so that a preliminary calcification or power of calcium absorption in the tissue seems to be advantageous to subsequent ossification. Pathological ossification, rather than normal ossification, seems to require preliminary calcification of the cartilage or of the necrosed tissue.

Since no chemical ion or soap in cartilage can be proved to be an adequate agent in producing the deposition of calcium phosphate and carbonate, it is interesting to note that Jan Wolf[31] has returned to the problem of chondroitin-sulphuric acid. This substance is a normal constituent of cartilage; it is increased in calcifying cartilage; it occurs in the amyloid deposits of the spleen, liver, and arteries; its calcium salt is very soluble. Jan Wolf has shown that the small veins draining the costal cartilage contain a measurable amount of chondroitin-sulphuric acid, and that this can be stained in situ by mucicarmine or basophilic stains. The acid is not found in the arteries. This suggests that the continuous removal of chondroitin-sulphuric acid from the matrix of the cartilage is necessary to preserve it from calcification. As yet no one has studied the effects on the solubility product of this acid or its calcium salt in the presence of other ions. Even as long ago as 1891, Schmiedeberg[32] suggested that one of the functions of cartilage was the production of chondroitin-sulphuric acid, and that this acid served as a mordant and possibly as a regulator of the processes of nutrition in the tissues. A chemical study of cartilage from this point of view may throw some light upon the metabolism of mucin, which hitherto has been unsolved.

Dentine and the Odontoblast.

Closely associated with the problem of the osteoblast and bone is the problem of the odontoblast and dentine. The metabolic processes involved are closely related, and the pathological processes run parallel in craniotabes, in dysostosis cleidocranialis, in osteomalacia, and in experimental rickets. The problem has been discussed recently by Mellanby,[33] W. Fish,[34] and D. Stewart,[35] and attempts must be drawn to the disturbing evidence adduced by Donaldson and French,[36] who claim that gly-

sts in the molar teeth of the rat after eruption. crown continues to increase in both dimensions; uch as 10 per cent. is added to its length and lth during the first two years, and the growth place in the dentine. This startling observation els us to regard dentine, like bone, as a tissue ct to prolonged growth, peculiarly susceptible anges in the blood calcium, and revealing the processes of absorption and deposition as bone. apid development of caries and the fragmentation e enamel in pregnant and nursing mothers may ue to the inroad made on the calcium of the ne and the resulting shrinkage.

ll more numerous are the problems afforded by arative anatomy, and it is surprising that so has been added to the original observations of Goodsir (1814–1867), who inaugurated the study lcification in sponges and molluscs. Pearl and ice [37] in 1909 performed a classical experiment. anastomosed the gut to the oviduct of the fowl showed that the fæces were covered with a shell. domestic fowl, with its active metabolism and powers of repair, appears to be an ideal animal he study of calcification and ossification. Con- ing the extent to which the costochondral ion and the costal cartilages have figured in the ture of rickets and respiratory diseases, it is nt that a detailed study of the comparative my of these structures offers a promising field esearch. The costal cartilages calcify in old n man, in adolescence in sheep and goats, and become really ossified in birds.

seems that until the chemist explains the colloidal sses which lead to the deposition of the salts lcium in two tissues so fundamentally distinct ying cartilage on the one hand and living bone he other, we must continue to regard the osteo- as a splendid being, endowed with genius, bility, and intelligence, ever ready to perform work at hand.

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CANCER OF THE INTESTINE.

A CLINICAL STUDY.

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THIS account is based on observations of 69 cases of cancer of the bowel (excluding the rectum) verified by operation. In all except two cases the cancer was of the large intestine. Although distinctly a disease of middle and old age, no stage of life affords immunity to it. The youngest in this series was a boy of 15 (much younger cases are on record) and the oldest a man of 78. Cancer of the small gut is rare; only two cases were noted. In the colon the distribution was as follows: cæcum to hepatic flexure, 12; transverse colon, 4; splenic flexure and descending colon, 20; sigmoid, 31. It is, therefore, much more common at the two ends of the colon, especially the lower.

The onset is usually insidious, taking the form of a vague dyspepsia or abdominal discomfort which may be regarded lightly by the patient until the crisis arrives with a well-marked attack of intestinal obstruction. The commonest symptoms and signs are: (*a*) in the earlier quiet period—pain, flatulence, and meteorism or distension with gas, alteration in the motions such as constipation and diarrhœa, and occasionally a local tumour; (*b*) the urgent condition—signs of acute intestinal obstruction and of local or general peritoneal irritation. Most of the early signs are those of early intestinal obstruction and must be weighed carefully before being regarded as trivial.

Early Stages.

In the early stages a mild degree of obstruction is apt to be the only significant sign. Rarely a local tumour can be felt. A woman of 50 who had suffered from metrorrhagia for some years was brought up for examination. In addition to the enlarged nodular fibroid uterus there was a small mobile lump on the left of, and not definitely attached to, the uterus, but sufficiently close to lead to the conclusion that it was a very mobile subperitoneal fibroid. At operation the small lump proved to be a cancer of the sigmoid. The cæcum is the part where a cancerous tumour is most commonly noted early.

1. *The pain* tends to be intermittent and varies from abdominal discomfort to fairly severe colic as the obstruction becomes more advanced. It may have a relation to meals and is, in fact, one of the forms of dyspepsia. The time relation is not, however, constant, like that of peptic ulcer, and the associated flatulence renders it more likely to be confused with gall-bladder dyspepsia. In a great many instances the pain is not enough to make the patient seek advice before acute obstruction supervenes. More rarely there is pain of a different type in the vicinity of the growth, as in one case where there was a large growth of the cæcum simulating a renal tumour, but not reducible into the loin. In other patients spread of the growth from the splenic flexure along the lieno-renal ligament gave severe pain, which in one instance preceded any signs of obstruction by some weeks and drew attention to the kidney rather than the bowel. Localised pain from ulceration of, and peritonitis over, the distended cæcum is discussed later.

2. *Flatulence* is a word covering various conditions. It may refer to eructation of gas associated with pain or discomfort, or to a feeling of fullness and distension, which is relieved by passage of the gas past the obstruction with gurgling and tinkling noises known as borborygmi. Such noises and eructations are so commonly due to errors in diet, neurosis, &c., that unless they are of recent development and recur frequently, accompanied by pain which is relieved by the passage of gas, they have little significance.

Careful inquiry into the smaller happenings of a patient's abdomen will often be helpful. Meteorism or considerable distension of the abdomen with gas may be regarded as the acme of flatulence; it is hardly an early symptom but is evidence that intestinal obstruction is already well developed and that the case has passed into stage (*b*).

3. *Irregular action of the bowels*, if of recent origin in a middle-aged or elderly patient who has previously been normal, is one of the most suggestive symptoms. Less frequent, smaller, and perhaps thin and tape-like motions suggest an obstructive growth low down in the large intestine. Obstruction higher up, where the motion is soft or liquid, will not have the same effect in causing constipation and alteration in the shape of the motions. Diarrhœa is less frequent and is usually associated with constipation, though it may be the initial symptom. Two quite different conditions are classed together as diarrhœa.

(*a*) The first is the liquefaction of fæces above an obstruction which has perhaps become temporarily blocked with a scybalous mass, the pouring out of secretion by the mucosa irritated by the retained fæces, and, still more, the inability of the mucosa to perform its normal function of extracting water from the fæcal porridge. The result is a great mass of peasoup-like material above the stenosed part. The temporary block gives way and the flood of liquid fæces pours down as diarrhœa or, if the dam does not yield naturally, persists until the surgeon lets out many pints of liquid fæces through a Paul's tube to relieve acute obstruction.

(*b*) The second is the irritation of a fungating growth by the passage of fæces which causes an outpouring of mucus, pus, sloughs, and perhaps blood, and irritates the bowel below, causing tenesmus and small, frequent, slimy stools. Diarrhœa of this type is a special feature of cancer of the lower part of the large gut, especially the rectum, and is common in the early morning. In the former class we find large intermittent stools of liquid fæces, and in the latter small, frequent stools with plenty of mucus, perhaps blood and occasionally sloughs.

A palpable tumour is not common, and when present is, in my experience, of evil significance. The larger number of cases are those of annular stricture, which can only be felt when the abdomen is opened. A cancer is most often palpable in the cæcal region. Unfortunately, the tumours that can be palpated are apt to be secondaries in the glands, mesentery, and omentum, and indicate that the stage for radical removal has passed.

To sum up, the only early signs of cancer of the bowel, except tumour, which is uncommon, are those of intestinal obstruction. The difficulty consists in distinguishing in time obstruction from other abdominal conditions of less serious or, at any rate, of less urgent import.

Later Stages.

The signs at this period are those suggesting what is commonly known as the "acute abdomen," and are of two types, (*a*) the obstructive, and (*b*) the peritonitic, though a combination is not uncommon.

The signs of acute obstruction hardly need repetition here; the severe colicky pain, the rising pulse, the vomit turning from green to brown, then acquiring a foul odour and finally consisting of liquid fæces, and the inability to pass flatus form a very definite picture. This is the class of case where true fæcal vomiting is best seen; it simply denotes that the obstruction is low in the bowel. Visible peristalsis and marked meteorism, without tenderness or rigidity, complete the picture.

The less frequent but more obviously acute type is where the bowel above the obstruction is so distended that it has become ulcerated with inflammation spreading to its peritoneal coat. It may be gangrenous, or perforation may have taken place. The abdomen will then show marked tenderness and rigidity, which may be general where leaking of fæces through a perforation has taken place, or localised, especially in the right iliac fossa, because the cæcum is the place of maximum distens where gangrene and perforation most commo occur. This last type of case gives a picture clos resembling acute appendicitis and has caused difficu in diagnosis.

X Rays in Diagnosis.

Since almost the only signs are those of oncom intestinal obstruction, it behoves us to get any h we can in distinguishing this from other varieties "dyspepsia." Careful following of an opaque m downwards and, still better, of an opaque ene upwards with the fluorescent screen, is of great h in early and doubtful cases, but more often results proving a negative and saving an explorat laparotomy than in finding and locating an intesti growth. Most commonly, in my experience, by t time the patient and doctor realise that anythi serious is the matter, it is sufficiently obvious th operation is urgent and that X ray examination v only take up time which might be better employ There can be no doubt, however, that if this means investigation were used more frequently for patie with obscure abdominal symptoms, a good ma cases would be diagnosed with sufficient probabil to warrant operation at an earlier period.

Complications.

These are, unfortunately, only too frequent, a they may be:—

1. Direct sequelæ of the growth: (*a*) Spread the cancer to omentum, glands, peritoneum, or liv rendering radical removal impossible. (*b*) Distensi of the bowel above a constricting growth, ending localised ulceration, gangrene, and perforation, a leading to local or generalised peritonitis.

2. Association with totally distinct diseases such appendicitis, suppurating ovarian cyst, or fibroids the uterus, any of which may render radical remo of the growth much more difficult.

Treatment.

Out of 69 cases preliminary drainage by colosto (including cæcostomy) or lateral anastomosis v done in 57; in the other 12 the operation v primary excision and anastomosis. Of the 43 ca which survived colostomy or anastomosis excision the growth was done in 24, and 16 recovered. As as possible the rule was followed of not resecting the primary operation when any obstruction v present. In some special circumstances this rule v broken, and not always with bad results. Taking all round, patients did far better after second than primary excision, the mortality being 30 cent. as against nearly 60 per cent. There is a gr temptation to try to get the matter finished with few operations as possible, especially in aged patien but experience shows that people over 70 stand t extra time in bed, needed for a second and th operation (excision and closure of colostomy), qu well. Colostomy, though a relatively minor ope tion, has quite a sufficiently high mortality; in t series it was 20 per cent. This may seem high, b it is partly caused by complications. For instan a middle-aged woman was admitted to hospital w well-marked signs of appendicitis. A large, r swollen appendix surrounded with lymph v removed and the abdomen closed. The patient ma a good recovery for 14 days and was about to up when she was suddenly seized with sev abdominal pain and rigidity with collapse. Immedi laparotomy revealed thrombosis of the infer mesenteric vessels, early gangrene of the sigmoid a descending colon, and a small annular cancer of sigmoid. Whether the appendicitis was a p coincidence or a sequel to septic absorption from ulcerated growth, as well as a source for thrombo is a matter for conjecture.

In several other cases the cæcum has been g grenous or perforated; not all these cases succumb but those who survive are fortunate. In anot patient a suppurating ovarian cyst rendered preliminary colostomy and excision difficult a

sumably inadequate, as recurrence took place. out a year later another inflamed ovarian cyst the opposite side further complicated the dition.

Primary Excision of Cancer.

Cases in which primary excision seems enticing :—

a) Those in which no obstruction is present—, those in which a palpable tumour is the leading n, especially growths of the cæcum.

b) Growths of the cæcum and ascending colon, ause of the technical difficulties of an enterostomy or above the cæcum followed by excision in the inity of such a fæcal fistula.

c) Where sepsis, peritonitis, and possibly abscess ut the growth without much obstruction lead the geon to think that if the cases recover from ostomy and drainage of pus the resulting adhesions l make removal of the growth later on impossible. impression is that cases of the last group are such l operative risks that as little as possible should done at first, provided that good drainage be ablished. For example, after draining an abdomen lower part of which was full of fæculent pus from bursting of an over-distended cæcum, and making æcostomy, I was able three months later to remove cancer of the transverse colon with compara- e ease and success. One can afford to wait te a considerable time after establishing bowel inage.

Cases of group (*b*) have most often tempted me a primary excision, and though the results are or they are no worse than those of secondary ection following anastomosis or drainage by erostomy. The mortality either way is about per cent. Where there is no obstruction there ms no reason why primary resection should not done; nevertheless, we shall probably get better ults by preliminary drainage.

Sites for Temporary Colostomy.

There are three sites where the colon has a suitably g mesocolon—viz., the sigmoid, the transverse on, and the cæcum. The sigmoid is seldom ailable for growths above the rectum, and it is prising how often it is too short to bring up to the face. In some cases the sigmoid loop is long ough to use the upper part for a left inguinal ostomy for cancer of the lower sigmoid; more en, however, the colostomy must be made in the nsverse colon or cæcum. The cæcum is the place st generally suitable and its great advantage is essibility. In the course of operation for intestinal struction the cæcum is the first thing to look for, d therefore by the time one has decided on the local dition and diagnosis (provisional or complete) is ready to hand and can readily be brought out ough a small grid-iron incision in the right iliac sa, well away from the future field of operation the middle line. Moreover, the fæces here are uid and escape readily, so that the Paul's tube es not get blocked with scybalæ, as may happen ver down. The disadvantages are more apparent an real. (1) The cæcostomy is not an artificial us but a fæcal fistula—i.e., the current of fæces tapped but not entirely diverted so that we cannot oid letting fæces pass the growth, and operation er cannot be rendered aseptic. As a matter of t, even if the fæcal stream be diverted, it is often possible to get all the fæcal masses out of the wel, especially as they are often below the growth. The fluidity of the fæces is a great advantage for emporary colostomy, but owing to irritation of the in is a serious drawback for one which is intended be permanent. Therefore one must try to make re that the growth is removable before doing a costomy. In urgent cases this may be too difficult d dangerous, and, of course, it is possible to make permanent colostomy lower down after the obstruc- n is relieved and close the cæcostomy. To perform ree operations in a patient condemned to death is not a very satisfactory procedure, but it may be unavoidable.

The transverse colon has the disadvantages (1) that it may be pushed up by the distended guts and may be difficult to bring to the surface; (2) that the attachment of the omentum renders it hard to make a neat colostomy opening, although when there is time the bowel can be freed from the omentum; (3) that it comes up most easily in the mid-line, where colostomy is rather in the way of further proceedings. The transverse colon is more useful for a permanent colostomy.

Where the cancer is in a long loose loop of colon the loop and growth may be simply pulled up outside the abdomen and a colostomy made above the growth. A few days later, when the obstruction has subsided, the loop of bowel with the growth can be resected without anæsthetic close to the abdominal wall. Still later the two ends of colon can be freed, sutured end to end, and replaced. The last operation is practically extraperitoneal, as the adhesions about the abdominal opening usually stretch sufficiently to allow of manipulation and suturing without opening the peritoneum. This method of Greig-Smith is the one for debilitated subjects, but is only suitable in a few instances, especially for growths of the sigmoid. The disadvantage is that, although a good length of colon can be removed, the amount of mesocolon and glands available may be inadequate to make the resection sufficiently radical. Usually 10 to 20 days were allowed to elapse after the preliminary colostomy before removal of the cancer was attempted, but occasionally, owing to complications, as much as three months passed with quite successful results.

Resection of the Cancer.

The work of Jameson and Dobson has given us a standard of the amount of bowel, mesentery, and glands that should be removed if possible for growths of the various parts of the colon, and I have had this standard in mind in operating on these cases. It happens, however, fairly often that the condition of the patient or the complications involving the growth render it impossible for a classical excision to be carried out in its entirety. Fortunately, these growths are mostly of a sclerosing, slow-growing type with late secondary spread, and what seems on anatomical and pathological grounds an inadequate operation often proves quite successful. End-to-end anastomosis was most frequently employed and occasionally end to side. This saves material where there is not too much length to spare and has, in my experience, given better results than the lateral method. If a cæcostomy had not been made at a previous operation one was always provided when resection and anastomosis was done, to act as a safety-valve for flatus and to prevent tension on the suture line.

Table of Operations and Results.

—	Colostomy.		Anastomosis.		Primary resection.		Secondary resection following—			
							(*a*) colostomy.		(*b*) anastomosis.	
	L.	D.	L.	D.	L.	D.	L.	D.	L.	D.
Small intestine ..	—	—	1	0	1	0	—	—	—	—
Cæcum and ascending colon ..	1	0	2	3	2	4	0	1	1	1
Transverse colon ..	3	1	—	—	—	—	2	0	—	—
Splenic flexure and descending colon	11	3	3	1	—	2	5	4	1	0
Sigmoid	21	5	1	—	3	1	7	2	—	—
Total ..	36	9	7	4	6	7	14	7	2	1

L. = Lived. D. = Died.

Conclusions.

About half the cases come to hand at a sufficiently early stage to warrant an attempt at radical removal. Few cases are thought to need surgical advice until

intestinal obstruction is becoming obvious. Earlier investigation with opaque enemata should help to separate this class of "dyspepsia" from other less serious conditions. It is largely delay which makes the mortality of colostomy so high.

A certain number of cases are beyond radical operation, from secondary spread, before any symptoms are noted by the patient. A preliminary colostomy (cæcostomy) is a wise precaution even where there is no obvious obstruction.

There is no need for great haste after the colostomy is established; weeks or even months may be needed before the patient is fit to undergo the more radical operation of resection of the cancerous growth.

THE THERAPEUTIC ACTION OF PLASMOQUINE AND PLASMOQUINE-COMPOUND* IN MALARIA.

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One of the first specifics in medicine to be discovered, quinine has held the premier place in the treatment of malaria for nearly 300 years, and, in spite of a vast amount of research upon the action of the alkaloids of cinchona during the last 14 years, no striking improvement has been made in its therapeutic qualities. No one can doubt the instantaneous and selective effect of quinine upon the malaria parasite, but the drug does not entirely extirpate the infection from the body; there usually remain trophozoites which migrate to some secure spot and there multiply and produce a relapse whenever conditions become favourable. Effective quinine therapy is based upon the belief that it is necessary to continue its administration in gradually decreasing dosage until two months from the time of the last appearance of the malaria parasites in the circulation; in other words, it is believed that only by constantly assailing the parasite with repeated doses of quinine is it possible to prevent it from multiplying and producing further relapses. This is especially true of the benign tertian parasite, *Plasmodium vivax*, which may produce an infection that it is almost impossible to eradicate with quinine until the natural life-span of the parasite has been run and it dies out from inanition. This may take from one to three years.

We have no really conclusive evidence that quinine—for instance the bihydrochloride salt—when injected intramuscularly or intravenously, is able to extirpate an infection more effectively or speedily than when it is absorbed by the alimentary tract. The drug is excreted equally rapidly from the body, and, although injection has its legitimate uses when quinine by the mouth cannot be tolerated, yet it is cumbrous, painful, and sometimes even dangerous. Some people, especially women, have an insufferable intolerance to the drug. In different subjects it may provoke intractable dyspepsia, vomiting, and diarrhœa, the most irritating tinnitus, or a toxic urticaria, while in some it is a powerful cerebral depressant. Research upon the various salts of quinine has not demonstrated that any particular combination has special curative or preventive virtue. The other alkaloids of cinchona bark—cinchonine, cinchonidine, and quinidine—possess no greater parasiticidal action than quinine itself. Obviously some alternative specific drug for malaria is eminently desirable.

Plasmoquine.

The chemical formula of quinine is complicated, but it is known to be a combination of a quinoline ring with piperidine. The former appears to be a protoplasmic poison. Many unsuccessful attempts have been made to synthesise quinine in the laboratory and other compounds have been elaborated in the process. Schulemann, Schönhöfer, and Wingler have synthesised a derivative of quinoline (ethylamino-quinoline hydrochloride) which is now known as plasmoquine and which was found to exert a toxotropic effect upon the plasmodium of birds (*Plasmodium præcox*). According to Hörlein, its exact constitution is the salt of alkylamino-methoxyquinoline. Kopanaris, the brothers Sergent in Algiers, and Giemsa in Hamburg had already shown that quinine exerts an effect upon the plasmodium of canaries which is comparable to its effect upon the malaria parasites of man.

Estimation of Therapeutic Action.

The treatment of bird malaria with the various derivatives of the quinoline ring afforded a means of comparison of these compounds with the salts of quinine. Further extensive experiments upon canaries artificially infected with *P. præcox* were carried out by Roehl in the Chemotherapeutic Laboratories at Elberfeld. Difficulty was at first experienced in assessing the correct therapeutic action as plasmoquine caused too violent a local reaction when injected into the breast muscles of these delicate creatures, and the exact amount ingested could not be estimated when it was mixed with their food. Finally Roehl devised a pipette about the size of a ureteric catheter, through which an exact amount of plasmoquine could be injected directly into the stomach of the canary and its effect upon the parasites accurately estimated. By calculating the amount of quinine necessary to cause a permanent disappearance of *P. præcox* from the blood of infected canaries, it was found that plasmoquine exerted a parasitotropic action 60 times greater than that of quinine. Another remarkable observation resulting from these experiments was that plasmoquine exercises an especially destructive action upon the sexual stages, or gametocytes, upon which quinine is almost inert. The next step was to test the effect of plasmoquine upon human malaria. A dose of 0·25 g. daily was found to exert toxic effects; the patient developed a blue lividity of the skin and nails, the blood became of a peculiar chocolate-brown colour, due to the conversion of hæmoglobin into methæmoglobin, while partial collapse and sometimes vomiting was produced. The cyanosis, which, when intensive, is extremely alarming both to patient and physician, is now generally recognised as indicating that the dosage of plasmoquine is too large and that it is exerting a toxic effect. At first Mühlens and Sioli advocated a dose of 0·1 g. plasmoquine daily for three days after the disappearance of the malaria parasites from the circulation. Later it was found that even this dose was too large for general use and that 0·06 g. daily was sufficient to extirpate the infection without producing cyanosis. Plasmoquine is practically tasteless, but when chewed produces a curious anæsthetic effect on the tongue and pharynx. When tested by Sioli in therapeutic malaria for general paralysis and by Mühlens in a series of 134 natural acquired infections, it was found that plasmoquine exerted the same lethal action upon the gametocytes of benign and subtertian malaria as it had already been shown to exert upon the *P. præcox* of birds. The gametocytes, or crescents, of the subtertian parasite disappeared after four days. The action of the drug upon trophozoites of the subtertian was much less satisfactory than upon similar stages of the benign tertian parasite. These observations I was able to confirm in a series of 28 cases of malaria treated in London in 1926. In addition I noted the rapid reduction in the size of the spleen; in some instances the shrinkage was so rapid as to cause very considerable pain over the splenic area, and in others the administration of the drug had to be discontinued on account of the acute abdominal pain it produced. It was found necessary to interrupt the course of plasmoquine to allow of the total excretion of the drug from the body. The drug could be given in full therapeutic doses (0·06–0·08 g.) daily for seven consecutive days for six separate weeks if a break of five days was allowed between each course.

* Identical with plasmochin and plasmochin-compound.

Plasmoquine-compound.

Subsequently Schulemann and Memmi showed that therapeutic action of plasmoquine was greatly anced by the addition of quinine, and that the cific plasmoquine cyanosis was thereby avoided. other words, the therapeutic actions of plasmoquine l quinine are antagonistic. It was found, moreover, t the addition of small quantities of quinine greatly reased its parasitotropic action upon subtertian ections and that the clinical results were, as a rule, erior to those of plasmoquine alone. Schulemann l his fellow workers have shown that one-tenth of daily amount of plasmoquine taken is excreted in urine. The presence of the drug in the urine can ascertained by chloranil, which gives an intense blue our with plasmoquine, but not with quinine.

The combination of quinine sulphate with plasmoine is now known as "plasmoquine-compound." is put up in tablets of 0·01 g. (gr. 1/6) plasmoquine h 0·125 g. (gr. 2) quinine sulphate. The following eme of dosage and treatment is the one I generally vise :—

For Benign Tertian and Quartan Malaria.

week, 7 days, 2 tablets plasmoquine-compound three times daily (0·06 g. (gr. 1); plasmoquine plus 0·75 g. (grs. 12) quinine three times daily).

Treatment should extend over a further 44 days, nposed of four separate weeks' treatment (making e weeks in all) of 12 tablets of plasmoquine-npound daily with four days' interval between each ek. It is necessary to follow this scheme closely in ler to prevent relapses.

In subtertian malaria it has been found advisable alter the periods during which the drug is adminised. The first period should be one of five days lowed by a four days' break, and the subsequent e courses of administration should be five days each, tead of seven, as given in the above table. It is cessary to be explicit about the dosage of smoquine-compound, as confusion is apt to arise this point. Recently the size of the individual blet has been altered to contain twice the amount merly dispensed. Up to a month ago each tablet ntained 0·005 g. plasmoquine and 0·0625 g. inine.

In a recent communication I have been able to ow that plasmoquine-compound has a striking ect upon the gametocytes of both subtertian and nign tertian malaria. Disintegration of crescents kes place after the exhibition of 8 tablets of smoquine compound (i.e., 0·08 g. plasmoquine is 1·0 g. quinine), while with pure quinine these scents sometimes persist in the circulation for a nth.

Recent Experiences in the Treatment of Malaria with Plasmoquine-compound.

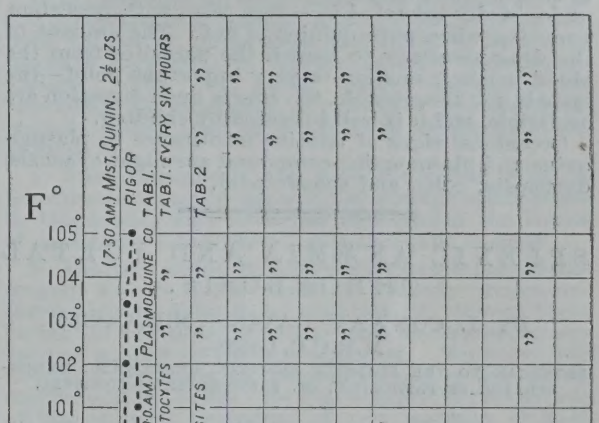
During the year 1927 and the early portion of 1928 ave discontinued the use of plasmoquine for that plasmoquine-compound, and the results have been the whole satisfactory, both clinically and parasitogically. The cases here described were treated in spital where prolonged and accurate observations uld be made.

Of 18 benign tertian cases 12 were in men and 6 in women; youngest was a boy of 8 years of age. The average gth of stay in hospital was 11 days and the parasites appeared from the blood stream after an average amount 13½ tablets of plasmoquine-compound (i.e., 0·135 g. smoquine+1·687 g. quinine). As a rule the patient eived a total amount of 25 tablets (i.e., 0·25 g. plasmoine, 3·125 g. quinine) while in hospital.

In one case only was a slight cyanosis observed after the th day of administration of the drug. The only other toward symptoms noted were dyspepsia, occasionally dominal pains, and, in one case only, dizziness. Subsequent perience has shown that these could be removed by glucose , given daily, either in powder or liquid form. As with e plasmoquine, a rapid contraction in the size of the een took place and a corresponding clinical improvement the condition of the patient was noticed. In three cases, which considerable blood destruction had taken place, there was an increase of red blood corpuscles of 1,000,000 within a week. In only one case did a rigor or secondary rise of temperature take place. Two of the best clinical cases of the series had previously exhibited intolerance to quinine, both by immediate dyspepsia and vomiting and later by tinnitus and cerebral irritability. In both the subsequent course of plasmoquine-compound was well tolerated.

Relapses.—No doubt relapses do occur, just as they do after prolonged quinine therapy. I have records of two clinical relapses within six months of the cessation of treatment in the above series of 18. Probably further experiences of plasmoquine-compound will indicate that a still more prolonged constant therapy is necessary to stamp out the infection from the body.

The 11 cases of *subtertian malaria* were all in males. Amongst them were five cases which, from the severity of the symptoms, could be legitimately regarded as of the pernicious form. One, from the acuteness of onset and the persistence of diarrhœa and vomiting, could be classified as a genuine case of abdominal malaria, and it was interesting to note that he showed a persistent leucocytosis of 20,000. One had recovered from a recent attack of blackwater fever, a third showed an intolerance to massive quinine therapy



Temperature chart of a case of benign tertian malaria in a patient aged 10. Massive quinine therapy had been tried but had not prevented numerous relapses on alternate days. On treatment with plasmoquine-compound, as shown on the chart, the malaria was apparently cured, no relapses having been recorded since cessation of treatment six months ago. (The dosage is that of the smaller size tablet as described above.)

and had suffered from relapses in spite of it, while a fourth had been previously diagnosed on clinical grounds as tuberculosis. Very large numbers of crescents were found in the peripheral blood (132 to every 200 leucocytes). Crescents were present in three cases and ring-forms were found in eight. In one instance the appearance of scanty crescents in the peripheral blood was noted during the course of treatment with plasmoquine-compound (i.e., after 0·29 g. plasmoquine and 3·6 g. quinine). The length of treatment in hospital was 14 days and the average amount of plasmoquine-compound required to banish the infection was 13½ tablets (0·135 g. plasmoquine and 1·68 g. quinine). The average amount of the drug taken was 27½ tablets (or 0·27 g. plasmoquine and 3·37 g. quinine).

On the whole the results were not so satisfactory as in benign tertian malaria. In two cases, owing to the severity of the symptoms—vomiting and pyrexia—the action of plasmoquine-compound had to be reinforced by two intramuscular injections of quinine, grs. 5 each. Nevertheless, in three very severe cases the clinical improvement was striking and quite as satisfactory as after intensive quinine treatment.

Quartan Malaria.—I have had only one opportunity of observing the effects of plasmoquine-compound in quartan malaria.

The patient had suffered almost continuously for four years from persistent relapses of a peculiarly intractable form of fever which did not yield to quinine. She had a large and painful spleen and a scanty infection of quartan parasites in the peripheral blood. A full course of plasmoquine-compound was followed by a slight cyanosis, which was transitory and unaccompanied by any other alarming symptoms. The clinical results, as far as could be ascertained, were satisfactory and no more relapses have occurred. The physical condition is satisfactory.

Conclusions.

The time is not yet ripe to draw a final conclusion upon the rôle which plasmoquine is destined to play in the therapeutics of malaria. I am not suggesting that it is going to replace quinine in the treatment of every case, but I submit that sufficient evidence has now been accumulated to show that, under certain circumstances, it can act as an efficient substitute in patients who have been susceptible to, or intolerant of, large doses of quinine. Its most important property is that it affords an alternative treatment and is undoubtedly tolerated in severe cases with persistent vomiting when pure quinine is not. The amount of the drug necessary to banish the parasites from the blood is much smaller—a very important point—the taste is not disagreeable, the effects upon digestion are negligible, and it is well tolerated by children.

Occasional signs of relative intolerance to plasmoquine and plasmoquine-compound are slight cyanosis, dyspepsia, colic, and splenic pain.

SPLENIC ANÆMIA AND PORTAL THROMBOSIS.

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THE relation between splenic anæmia, Banti's disease, and portal thrombosis has been the subject of much controversy in medical literature. The current orthodox view applies the term "splenic anæmia" to a condition of primary splenomegalic anæmia of unknown origin, without enlargement of lymph nodes or cirrhosis of the liver and having a striking tendency to gastro-intestinal hæmorrhage; the expression "Banti's disease" is confined to cases in the above group which terminate in atrophic hepatic cirrhosis with ascites. Therefore cases of splenic anæmia which progress without showing any tendency to cirrhosis, or which develop a late hæmolytic jaundice—again without cirrhosis—as described by Banti himself,[1] would be excluded from this group. On the other hand, cases of splenic anæmia exhibiting later the signs of Banti's syndrome would be regarded after the event as early cases of Banti's disease. The latter, it is held, is a terminus towards which certain cases of splenic anæmia progress. They do not all do so, and therefore the terms can only be synonymous in certain cases, and then only retrospectively. Splenomegalic anæmia associated with syphilis, malaria, tuberculosis, or kala-azar should also, on this view, be grouped separately. According to this classification it will be seen that any case exhibiting Banti's *syndrome*, attributable to a hitherto recognised cause, ceases to be one of Banti's *disease*; this applies also to splenic anæmia. Both are essentially expectant groups awaiting nomination. This is the view taken by Leon-Kindberg, amongst others, in his admirably clear and discriminating article on the sclerotic splenomegalies.[2]

Differing Interpretations.

Many writers, however, chiefly French and American, disagree with this conception, and wish to classify the conditions under the general headings of (1) hepatic congestion or cirrhosis, (2) syphilis, and (3) malaria. Gilbert and Lereboullet,[3] in 190 pointed out that a condition indistinguishable fr Banti's disease can be produced by portal congesti of hepatic origin. The spleen, in their view, is t satellite of the liver, and splenomegaly of this ty is merely an episode of portal hypertension. P sistence of the umbilical vein, so that excessi amounts of blood are carried to the portal sinus, h also been described as a cause. Oettinger a Fiessinger,[4] and Warthin,[5] consider that Bant disease as such is an illusion, and describe a group splenomegalic anæmias associated with portal thro bosis. Warthin is particularly out-spoken, a says: "Until it has been shown that the splen anæmia of Banti's complex can exist without a evidence of obstruction in the portal or splenic vei then my contention must hold that the complex no disease-entity. Until this is done, splenic anæm and Banti's disease must be regarded as coördinat symptom-complexes and not individual diseas entities." Elsewhere he says that an infecti thrombophlebitis of the portal or splenic veins is t essential feature of all these cases, no matter und what head reported—splenic or portal thrombos splenic anæmia or Banti's disease. The importance this view is further emphasised by the fact that of t six cases diagnosed clinically as either splenic anæm or Banti's disease in the post-mortem register St. Bartholomew's Hospital since 1920, portal thro bosis was present in every one. The facts, then, a not in question. What seems doubtful is the int pretation to be placed upon them, whether su thrombosis is primary or secondary, and the exa discrimination of the causal sequences at wo Relation in point of time is notoriously difficult establish by post-mortem methods, and it is diffic to see how this question can be settled other than an analysis of events occurring within the cou of the disease itself. Two cases, occurring recent at St. Bartholomew's Hospital, seem to go some w towards meeting Warthin's challenge and supplyi a solution to this problem.

Two Cases Related.

CASE 1. *Fatal Termination.*—A woman of 50 was admitt to hospital complaining of breathlessness, palpitati epigastric pain after food, and pain in the left side of t chest, all of one year's duration. She was pale and sallo The spleen was palpable, and both it and the liver w described as being "three fingers-breadth below the cos margin." Ascites was absent. There had been hæmatemesis. The Wassermann and sigma reactions w negative, and the fragility of the red cells was within norm limits. Van den Bergh's test was not done, but there w no obvious jaundice. A blood count showed: Hæmoglob 35 per cent.; red cells, 2,540,000; white cells, 3800 (po morphs, 2508; lymphocytes, 1216); colour-index, 0·7. nucleated red cells or megaloblasts were seen.

The patient had never had malaria or jaundice, and th were no enlarged lymph nodes. A diagnosis of sple anæmia was made, and three blood transfusions were giv which raised the hæmoglobin to 40 per cent. and the r blood cells to 4,900,000. Splenectomy was then perform The patient progressed uneventfully until the fourteen day after operation, when she suddenly felt faint a her temperature dropped from 99° to 95° F.; pulse-ra 100; respirations, 20. The abdomen was distended, b no pain, tenderness, rigidity, or shifting dullness was notic The patient passed two stools containing bright-red blo Early the next morning the pulse-rate suddenly rose 150; temperature, 95°; respirations, 20. A blo count at this time showed: Red cells, 6,890,000; hæm globin, 85 per cent.; white cells, 63,400. (Six days af operation a leucocyte count showed only 6900.) T striking rise in the number of red cells and in the hæmoglo content was evidently due to sudden concentration of t blood, associated with shock. The patient was consider too ill for operation, but a further transfusion was do one hour after which the temperature rose to 102°. T patient died the following morning with a temperature 107°.

Post-mortem Examination.—The peritoneal cavity c tained much clear yellowish fluid. The lower three f of the ileum were congested and œdematous. The ligatu on the splenic pedicle were intact and there was no evide of suppuration. A film made from the tissues of the ped and stained by Gram's method showed no organis

ture showed a coliform bacillus, probably a contamination. e liver gave evidence of early nutmeg changes, but no dence of cirrhosis was noted. Adherent ante-mortem was present in the splenic, portal, and mesenteric ns. The post-mortem note stated: "The phlebitis and ombosis have presumably spread from the splenic pedicle ng the splenic vein, but no proof of bacterial infection s obtained." No explicit note was made either at ration or at the post-mortem examination on the size he splenic vein or the condition of its wall. The spleen s unfortunately not examined microscopically.

ASE 2. *Recovery.*—A man, aged 23, was admitted to pital complaining of black stools. Four months pre-usly he had had hæmatemesis, for which he had been ated at another hospital with Lenhartz diet and ultra-let rays. On examination the spleen was palpable; ndice and ascites were absent and there were no pable lymph nodes. A blood count showed: Hæmo-bin, 48 per cent.; red cells, 3,200,000; white cells, 5600; our-index, 0·75. The Wassermann and sigma reactions e negative, and so was van den Bergh's test. There was history of malaria. A diagnosis of splenic anæmia was de and splenectomy performed.

Morbid Anatomy.—The spleen weighed 25 oz., and was n and fibrous. Perisplenitis was absent, and there were infarcts. Microscopically, it showed a rather a-cellular eralised fibrosis. There was no uniform congestion, but a small scattered hæmorrhages were present, due possibly operative trauma. The sinuses were not dilated and tained very few cells. There was no evidence of endo-lial proliferation or the deposition of pigment. The ture was quite unlike that described by Tansini and rone in splenomegaly due to portal thrombosis,[6] where splenic sinuses were transformed into "large lakes of od," and the pulp infiltrated with macrophages and ment.

The patient recovered from the immediate effects of the ration, and eight days later a blood count showed: d cells, 2,800,000; white cells, 8600; polymorphs, 6620; mphocytes, 1030. An estimation of the hæmoglobin s not done. Thirteen days later the figures were: moglobin, 44 per cent; red cells, 3,400,000; white cells, 000; colour-index, 0·7.

On the fourteenth day after splenectomy the patient had udden attack of severe abdominal pain and vomited. His mperature dropped to 96°; the pulse-rate rising to 135. e abdomen become distended and free fluid was noted. leucocyte count was done at this time. Intraperitoneal morrhage was suspected, and it was decided to perform suprapubic exploratory puncture. This was done, and o pints, not of blood but of clear yellow fluid, were with-wn. A drainage-tube was left in, and the patient nsfused with 400 c.cm. of blood. He vomited afterwards, d was rather restless. However, his temperature gradu-y improved, reaching normal on the third day, and he de a good recovery. Six months later a blood count wed: Red cells, 4,090,000; hæmoglobin, 50 per cent.; ite cells, 9000. In spite of this, there can be little ubt that acute portal thrombosis supervened on the rteenth day after splenectomy. The exact site must main uncertain, but two facts—the ascites and the sudden ere pain—make it probable, as will appear later, that h portal and mesenteric veins were involved.

Signs and Symptoms of Portal Thrombosis.

The signs and symptoms of portal thrombosis e fairly well known and have been described haustively by Langdon-Brown.[7] They are more less invariable, and include abdominal pain, cites, diarrhœa with or without blood, vomiting with without hæmatemesis, enlargement of the spleen d, if of acute onset, general shock. All these were esent in the two cases described in this paper. ngdon-Brown suggests that the signs and symptoms ay bear some relation to the site of thrombosis. Broadly speaking, in any case of pylethrombosis, ascites is present, the trunk of the vein is probably cluded; if hæmatemesis occurs, the splenic vein probably involved; and if pain, vomiting, diarrhœa, d collapse are the leading symptoms, there is obably obstruction of the superior mesenteric in." The onset is not always acute; it may be w and progressive, though interrupted by critical isodes corresponding to fresh attacks of thrombosis. ick [8] and Frugoni [9] emphasise this irregularity progress as an important point of distinction tween primary splenomegaly and that due to portal rombosis. This point will be referred to later.

Acute thrombosis of the coronary vessels is well known to give rise to an emphatic leucocytosis. A leucocyte count in direct response to the acute abdominal condition was done in only two cases, in Case 1 of this paper, and in another case of acute portal thrombosis not described here. In the latter the count rose from 18,000 to 34,000 with the onset of symptoms. In Case 1 splenectomy had been performed 13 days previously, and splenectomy per se causes a leucocytosis. In fact, however, the appearance of acute symptoms introduces a figure of a different order from that anticipated on physiological grounds, so that this may be taken to represent leucocytosis of thrombogenic origin. Before splenectomy the leucocyte count was 1200; seven days afterwards it was 9500. With the onset of acute symptoms on the thirteenth day after operation it rose to the quite unexpected figure of 63,400. Further leucocyte counts in patients with portal thrombosis are to be desired, but the evidence of these two cases suggests that leucocytosis may occur.

Classification of the Two Cases.

It is clear that all these signs and symptoms, with the exception of a possible leucocytosis, are common both to portal thrombosis and (if they have any separate existence) to splenic anæmia and Banti's disease. The two cases under discussion are presented as examples of primary splenomegalic anæmia rather than of thrombosis, on the following grounds:—

1. That thrombosis was here the initial cause is improbable, as acute signs and symptoms attributable to thrombosis only occurred well within the course of an already established "splenomegalic anæmia."

2. The contention that this pre-established splenomegaly was itself the result of a slowly progressive thrombosis is difficult to maintain in view of three facts: (*a*) The absence in the past history of exacerbations similar to the one observed. Reference has already been made to the importance of this point, emphasised by Frick. (*b*) The absence in the records of the surgical procedure of any mention of such thrombosis or thrombophlebitis in situ. (*c*) The fact that Case 2 made such a complete and rapid recovery from his post-operative attack. If this had been merely the culmination of a slowly progressive thrombotic process extending over one year, such a rapid remission would seem most improbable, with or without splenectomy.

If these points be admitted, then Warthin's theory of an initial and invariable portal thrombosis as the underlying condition in both splenic anæmia and Banti's disease seems clearly inapplicable to these two cases. It is not maintained that portal thrombosis never gives rise to a picture indistinguishable from Banti's syndrome; it seems certain that it can, and does. But it is maintained that thrombosis seems peculiarly liable to develop during the course of a primary splenomegalic anæmia without lymphatic enlargements and with or without ascites. To argue in the reverse way would be on all fours with the attempt to show that portal thrombosis is the cause of hepatic cirrhosis, since Langdon-Brown [7] has shown that this is the commonest condition associated with portal thrombosis in general.

Rosenthal,[10] in a recent study of the platelets in Banti's disease, has shown that cases can be divided into two groups, thrombocytic and thrombopenic. The former he considers particularly liable to severe hæmorrhages; the latter to thromboses, especially post-operative. Unfortunately, platelet counts were not done on either of the cases considered here, but it is clear that the idea opens up a fresh field for investigation and offers a possible explanation of the frequency with which thrombosis occurs. The post-operative tendency to it may further be related to the fact that the red cells are apt to rise very rapidly after splenectomy, and Leon-Kindberg [11] reports transient polycythæmia on several occasions. This was present in Case 1 (red cells 6,890,000), although

it must be remembered that here shock was probably the predominant factor.

Summary.

The relationships between splenic anæmia, Banti's disease, and portal thrombosis are mentioned. The classical view of Banti, and later of Leon-Kindberg, is summarised, and contrasted with that of Warthin. Two cases of anæmia with splenomegaly associated with portal thrombosis are described in detail. Reasons are given for believing them to be examples of primary splenomegalic anæmia (which therefore exists) rather than of thrombotic splenomegaly. For this reason it is suggested that they may meet Warthin's challenge, quoted in the body of the paper. Rosenthal's work on the platelet content of the blood in Banti's disease is mentioned, and an attempt made to relate this with the tendency to thrombosis.

I have to thank Prof. G. E. Gask, Mr. R. M. Vick, and Dr. George Graham for their kindness in allowing me to refer to cases under their charge.

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Clinical and Laboratory Notes.

A CASE OF CERVICAL RIB.

By George A. Dunlop, M.B. St. And., D.T.M. & H. Liverp.,
Medical Officer to the European Hospital, Kuala Lumpur, Federated Malay States.

The discovery of cervical rib by X rays is not uncommon, but the symptoms of this case were interesting.

The patient, an assistant school-master, is a healthy man of 24, who has twice fractured his left clavicle. I first saw him in his bungalow in October, 1927, when he looked rather pale and complained of a feeling of compression over the left side of the chest and of severe pain in the left supraclavicular region, radiating down the left arm. He felt "giddy" and "faint," and had "palpitation." The pulse-rate was 140 but regular, the apex-beat was visible in the fifth interspace just outside the nipple line. The heart sounds were well heard at all areas, regular and closed. There was no swelling or œdema of the arms or legs, and no bony deformity of the clavicle; nothing abnormal could be palpated at the root of the neck and there were no signs or symptoms of disease of the nervous system.

He stated that he had had a number of these attacks since August, 1926, the first attack occurring in a rickshaw, when he had "giddiness in the head, general numbness down the left arm and side, and pain in the chest." This was diagnosed as pseudo-angina. A second attack, in October, 1926, was similar, but he noticed "a feeling of tightness in the left arm and a swollen appearance of the veins." During a third attack, in November, 1926, while in a motor-car, there was "numbness" and a feeling of cold in both arms and extreme cardiac pain. In December, 1926, he had a fourth attack in Hong-Kong during a dance, when, after the first dance, he had a violent palpitation and similar sensations in the arm and chest on the left side only. During 1927 he had a series of similar attacks up to October, when I saw him. He also had attacks of palpitation in bed at night after he had been lying down for some time, and he recognised prodromal symptoms of sleepiness and general weariness before an attack.

About ten days after I first saw him, the head-master of his school telephoned me to come urgently as the patient had "fainted" while teaching and was unconscious. When I arrived he appeared to have just regained consciousne His face was bluish, his respirations quick, and his puls rate 167. He was very confused mentally and was groanir There was no swelling of either arm, and he said that t compression and pain in the chest was suffocating hi He was assisted to his feet but was too "giddy" to sta alone; he felt better after being made to walk about. had developed a marked neurosis about his condition a was glad to come into hospital for investigation.

Physical examination did not reveal anything, but X r examination of the upper thorax and cervical region show bilateral cervical rib. The clavicles were normal in outlir He was shown the X ray films, the condition was explain to him, and he was discharged. During the next five mont the neurotic symptoms cleared up, but he had occasior attacks of pain, palpitation, and a feeling of constriction the chest. I advised him to walk about at the onset of attack, and this relieves him. As he was proceeding England on leave he was advised to seek surgical adv at home.

Dr. R. Dowden, principal medical officer, F.M.S kindly gave me permission to communicate th case.

NORMAL BIRTH OF A CHILD WEIGHIN SIXTEEN POUNDS.

By F. R. Parakh, M.D. Manch., M.R.C.S. Eng
Chief Medical Officer, Dr. Parakh Hospital, Bombay.

A Parsee woman was admitted to the Dr. Para Hospital on Jan. 13th, 1927, with strong pains and full labour. The woman was well built, of avera weight and height. She was 28 years old, and primipara, with normal pelvic measurements. T abdomen was enormously enlarged, and twi hydramnios or triplets were suspected, but after careful examination these were eliminated and monster or a giant was diagnosed. There were fœtal heart sounds audible, and as the head w fairly low into the pelvic cavity, and the soft pa were dilating and bulging well, no interference w indicated. After a labour of 11 hours she w delivered of a well-formed healthy stillborn ch weighing 16 pounds. The child showed no signs any monstrosity or any other deformities, and look a child of three months of age. The length of t fœtus was 59 cm., and the testicles very large. Th was a plentiful growth of hair on the head, the bo of which were fairly hard. The father of the ch is a small-made man of 30 years of age. Two childr by his first wife weighed 9 and 10 pounds each. the members of his family and his present wif family are of ordinary size and weight.

The puerperium has been normal throughou and the perineum, which was badly ruptured, h healed well and firmly.

A CASE OF RUPTURE OF THE SPLEEN AFTE ARTIFICIAL INDUCTION OF MALARIA.

By Noel G. Harris, M.B. Lond.,
Assistant Medical Officer, Springfield Mental Hospit Tooting.

The following case is, I think, worth recording: A man, aged 30, was admitted to Springfield Men Hospital suffering from general paralysis of the insa The disease was in an early stage, the first symptoms hav been noticed only three to four months before admissi Physically he was sound, except for the fact that he suffe from chronic dysentery, having contracted both the amœ and bacillary forms during the late war. There was history of any malarial infection.

On Dec. 6th he was inoculated with benign tertian mala He had ten good rises of temperature lasting over a period 12 days. On the morning following the tenth rise he jump out of bed suddenly. A few seconds after getting back collapsed, and was dead in an hour. At autopsy the abdon was found to be full of blood from a ruptured spleen. T spleen was only semi-solid, and the vessels appeared have just torn away, no defined rent being visible. T

sule was thickened. There was no evidence naked-eye uggest a chronic enlargement, the fibrous trabeculæ and cular sheaths appearing normal. Nor was there any ndary condition such as an infarct which would have n rise to the rupture. Unfortunately no microscopical mination was made.

The interest of the case lies in its being opposed to generally accepted opinion that great enlargement the spleen does not usually occur in a primary ack of induced malaria. Dr. Philip Manson-Bahr orms me that in naturally acquired malaria the rtality from ruptured spleen is only about one in ry hundred thousand infections, and I believe t there have only been four similar cases recorded er induction of malaria. The case would be more ily explicable had there been a history of previous laria, pointing to chronic enlargement of the een. Personally, I feel that, when treating cases general paralysis with malaria, a careful watch uld be kept for undue enlargement of the spleen, ecially if the patient has previously had malaria.

My thanks are due to Dr. Manson-Bahr and the nistry of Pensions for their information; also to medical superintendent of this hospital for allowing to publish the case.

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Public Health Services.

SCHOOL MEDICAL SERVICE.

Name of district.	No. on roll.	Aver. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.*
ffield ..	80,806	71,877	23,421	113,602	17·11
gan ..	13,454	12,094	4,124	8,859	22·4
ough of Cambridge	7,060	6,273	1,923	2,196	7·0

* Excluding uncleanliness and dental defects.

Sheffield.

Dr. T. Chetwood's report is this year limited to a icise statement of the progress of medical inspection l treatment. Shortage of staff may account for brevity of his survey, for he says that an additional ool medical officer is urgently required, and it is o clear that additions to the school nursing service desirable.

Sheffield differs from most other English towns separating the offices of school medical officer and dical officer of health, but the two departments in daily and friendly consultation. In the existing en-air school there is accommodation only for 290 y scholars, but plans have already been approved the establishment of a new school at Bents Green, h room for 50 residential pupils and 100 day olars. Since Sheffield contains nearly 2000 delicate ldren, this additional school is obviously required. luable work is being done for delicate and con-lescent children at a home at Fairthorn Green, pported by the generosity of the Sheffield teachers. new central clinic has been opened at Leopold-eet, which is also the administrative centre of the ool medical service. Increased clinic accommo-tion is needed. Dr. Chetwood offers his thanks many practitioners for willing coöperation and p in the effort to secure for school-children prompt atment of their ailments, and the implication that Sheffield practitioners are not reluctant to take advantage of such facilities as X ray treatment for ringworm afforded by the clinics.

The clinics received for treatment only seven children from the welfare centre, and there is still no nursery school in the city, but it is hoped that one will be opened during the current year. Mr. G. Wilkinson, whose resignation from the post of aural surgeon is much regretted, evidently had the confidence of the parents, for out of 232 cases of tonsils and adenoids recommended for operation, there were only 18 whose parents refused treatment. The ophthalmic surgeons dealt with 1179 new cases during the year, and the dental clinic with 18,000. 128 extra evening clinics were held after school hours for children suffering from toothache. This service is much appreciated locally, but most local authorities throughout the country do not favour large number of casuals, and possibly, when extra dental surgeons are appointed in Sheffield, the routine work will be so extended that casual sufferers will be almost eliminated. Dr. E. F. Skinner, the dermatologist, reports that severe cases of ringworm seem to be getting fewer every year. Among those who are afflicted X ray treatment is less often required; very small patches are dealt with, cheaply and efficiently, by shaving and parasiticide ointment, while 27 selected cases have been treated by the thallium acetate method with good results. Orthopædic treatment is given at the Edgar Allen Institute, and there are three special schools for physical defectives, and a residential sanatorium school for surgical tuberculosis. The school arrangements will be much improved when the education authority has appointed the proposed special orthopædic surgeon. The report of the superintendent of physical training, Mr. H. Cole, forms an interesting appendix, and his observations on the importance of postural training to health and efficiency are convincing.

Wigan.

Wigan has not in the past been a very healthy place for children to live in, and school medicine and hygiene are therefore of particular importance. Unfortunately the county borough still lacks many of the valuable agencies to be found elsewhere. For example, no open-air school exists, though there are large numbers of delicate children in Wigan. The initial cost of a residential open-air school would be considerable; Dr. H. Whitehead asks at present only for an open-air day school, and this at least should be established forthwith. Fifteen per cent. of the children attending school in Wigan are verminous. This figure, which is much too high, is nevertheless an improvement on former records. There are no school baths and the accommodation at the Corporation baths is quite inadequate. The congestion may soon be somewhat relieved by the establishment of Corporation baths at Pemberton. Physical drill is taken by the teachers with the advice of the assistant school medical officer, in the absence of any organiser of physical training. A number of girls have spinal curvatures, for which special exercises are necessary. For children with severe deformities a P.D. school is urgently needed. Following operative treatment for tonsils and adenoids, the children are taken home by ambulance, accompanied by a school nurse. This arrangement is certainly preferable to a journey home by public conveyance, but not comparable to the organisation now established by more progressive authorities, whereby children are retained in hospital for at least one night following the operation. In two directions the county borough has made some advance: (1) a definite scheme has been put into operation which will eventually ensure proper care and attention for orthopædic cases—the central clinic is already in working order; (2) in July, artificial sunlight treatment began at the Infirmary, and the results up to date have been very good. It is hoped that a light centre will be provided at an early date by the local authority in order that more cases may be treated.

Cambridge.

The percentage of children requiring treatment (7 per cent.) is remarkably low in Cambridge compared with the rest of the country, and the fact that it is higher in 1927 than in the previous seven years is probably due to more stringent marking. On the other hand, the tuberculosis figures for Cambridge are high—38 cases were notified for pulmonary tuberculosis—that is nearly 2 per cent. of those seen at routine inspection, the usual figure for England and Wales being about ½ per cent. The open-air school about to be opened may do much to combat this high incidence. The proposed school will not be quite of the usual type, since it is to accommodate 120 physically defective and also 30 mentally defective children. Previously there were no special schools, and the exact type of child taken into the class for backward children is not specified. Dr. A. J. Laird gives a table showing the steady decline of cases of ringworm in the borough over a period of 14 years.

Cambridge is well known for pioneer dental work, and Mr. W. Baird Grandison can use for comparison tables dating from 1908. Three sets of figures are given to show how much improvement has been effected during this period. The percentage of sound permanent teeth has risen from 12·5 per cent. in 1909 to 63 per cent. in 1927. The proportion of children with sound dentitions, temporary as well as permanent, is now 39·2 per cent. against 2·6 per cent. in 1909. The percentage of unsavable permanent teeth is said to have decreased from 30·6 per cent. in 1909 to 1 per cent. in 1927. These figures are set out to prove the value of a deliberate attempt to preserve the permanent dentition by sound preventive and constructive principles. Mr. Grandison acknowledges the coöperation of other workers, especially the teachers. A scheme of dental education was applied to 150 older girls; the course of lectures was followed by an examination, the results of which were so good that the lectures are to be repeated to double the number of children. Mr. Grandison makes a special plea that if an 11 o'clock meal is held to be desirable, the food consumed should be selected so as to eliminate injury to the teeth.

MENTAL HOSPITAL REPORTS.

The *Hertfordshire County Mental Hospital* at *St. Albans* had 918 patients on its books at the end of last year. The recovery-rate for the year was 22·1 per cent. and the death-rate 5·18 per cent. Thirty-two post-mortem examinations were held. There is serious overcrowding, so that proper classification and adequate treatment on modern lines is impossible. The general health was good; there were four cases of dysentery, one of diphtheria, and one of erysipelas. Five patients were notified as suffering from tuberculosis. The dental surgeon treated 158 cases. Patients were allowed out on leave on 296 occasions. The ward on each side is run on the open-door system, and a number of patients have full parole outside the grounds. Others are free to walk about the estate and a few have been allowed to go into St. Albans for football matches. There has been no abuse of these privileges. Improvements have been made in the dietary. A pathologist has been appointed, and his work has already been of great value in treatment. A sistor-tutor has also been appointed, and seven nurses and one attendant obtained certificates during the year. Possession has now been obtained of a site at Hixberry which is to be used for mental defectives.

The *Essex and Colchester Mental Hospitals* are two in number. At *Brentwood* there is overcrowding on the female side and urgent need for expansion, with 1770 patients on the books. Of the 185 patients discharged during the year, 136 were sent out on preliminary trial. The recovery-rate was 26·27 per cent., a very fair figure considering the large proportion of patients who are hopeless on admission. The death-rate was 8·11 per cent., and the principal causes of death were cardio-vascular degenerati and general paralysis. Eight cases of the lat disease were treated by induced malaria; two w discharged, and two others greatly improved. T consulting surgeon has performed a number operations, with excellent results. Full use is m of the verandahs on the admission and infirm wards, and the 21 cases of tuberculosis are nur on them. Nine wards are administered on the op door principle, and liberal parole is granted. nurses' home is badly needed, and plans for one h now been passed. A consulting engineer has b appointed to report on the question of electric li and power. Weaving and handicraft work have g steadily forward, and about 50 women are employ on it. The visiting dentist has seen a large num of patients, and artificial dentures are being suppl to many of them. 119 nurses are now certificat The Visiting Commissioners urge the appointment fifth assistant and a pathologist.

At *Severalls* there were 1730 patients under tre ment at the end of the year. The death-rate 7·52 per cent. and the recovery-rate 23·2 per ce The general health was good except for a few case typhoid. Search is being made for carriers. useful annexe has been opened for acute cases the home for night nurses is nearly ready. infirmary ward and a verandah are being bu The handicraft instructress has done good work both patients and nurses have benefited from gy nastic classes. There are now 113 certificated nurs but far too many of the women are untrained inexperienced.

Of the two *Kent County Mental Hospitals*, that *Barming Heath* housed 1853 patients at the end of year. The new Nurses' Home has added 157 b to the hospital accommodation as well as realis a long-cherished ideal concerning the better train and education of the staff. Since 1911 it has b compulsory for nurses to obtain a certificate, every effort is made to attract the well-educated g The recovery-rate of 36·1 per cent. was above average; the high death-rate of 8·7 per cent. caused by a severe outbreak of influenza in spring. Pneumonia accounted for a quarter of deaths, and general paralysis for one-tenth. P mortem examinations were made in 94·4 per cent cases. The hospital has been free from dysent and enteric for two years. The new cinema is m appreciated by the patients. The Visiting C missioners advise the installation of X and vi rays and the provision of clinical rooms. M occupational work is carried out in the wards, as as on the farm and in the shops and laundry. each large "chronic" ward a room is set aside difficult patients, and they are encouraged to occ themselves with some simple handicraft. On male side 68·5 per cent. are usefully employed, the shops are becoming overcrowded.

At *Chartham Downs* there were 1275 patients, it is foreseen that the hospital will be over-full i few years' time. The new clinical laboratory and X ray plant are proving valuable additions, but present there is no operating theatre and no special attend regularly. Twenty-four per cent. of patients admitted were regarded as hopeless ca The death-rate was 8 per cent. and the recovery-r 29 per cent. Twenty patients are suffering fr tuberculosis, but half of them had the disease bef admission. Verandah accommodation is much need One clinical room has been arranged and others to be provided. Twenty-four patients were allo out on trial, and parole is granted beyond the est to 46 patients and within it to 88; only nine of privileged are women. One female and two male wa are conducted on the open-door system. Thirty-f men and 22 women nurses are certificated or registe

Institutions for Private Patients.

There were 173 patients at *James Murray's Ro Asylum, Perth*, on March 31st last. Forty-two the 66 new patients admitted during the year ca

a voluntary basis. The recovery-rate among ntary boarders was 39 per cent.; among the ified 30 per cent. The medical superintendent ibes the difference in the figures partly to the ng of spontaneous coöperation and the absence compulsion and restraint. He discusses the blem of the voluntary patient in an interesting y. The bodily health on admission was seriously aired in most cases. The death-rate was 8·6 per .; autopsy was performed after 5 of the 14 hs. The general health was good and there were epidemics. The chief structural improvement of year was the installation of a new central heating t in the autumn. In each hospital ward an airy exe has been provided for elderly infirm patients. f the attendants, but only 18 per cent. of the ses are certificated. The seaside home at Elie rides for some convalescent women patients. A patients work in the gardens.

he report of *The Retreat, York*, is, as usual, ıtifully illustrated; one photograph shows a ıp of articles made by patients, and is a testiıial to the occupation centre, which is already anding more room for expansion. There were patients on the books at the end of the year; ut of the 104 patients admitted came voluntarily. recovery-rate was 27 per cent. and the death-rate per cent. There was no serious epidemic ase, although influenza raged in the neighbourd. The prophylactic campaign against it forms subject of an interesting special report; the cipal measure was a daily throat spray and gargle all. General paralysis is being treated by induced aria and the medical superintendent feels that therapeutic measure is undoubtedly efficacious ıost cases. A house at Goathland was rented for summer and new accommodation, including 13 s of ground, has been secured at Garrow Hill. out-patient clinic at York County Hospital is ning well. Parole beyond the grounds is granted 1 patients, and within the grounds to 53. Fifty ents are usefully employed. Forty-four of the sing staff are certificated.

arnwood House Hospital, near *Gloucester*, had an age of 142 patients in residence during 1927, the number of certified patients admitted during year was greater than the number of voluntary rders—contrary to expectation. The recovery- was 36 per cent. and the death-rate 7 per cent. general health was good. One case of general lysis was treated by induced malaria but showed mprovement. Several patients were treated by ein shock, but the results were not encouraging. ting specialists have been appointed and a ngologist is to be added to their number. The less installations are much appreciated by the ents, and classes in handicrafts are held during winter months. Five new bedrooms have been ed on the male side, three of them with verandahs. otiations are in progress for installing electric , and a new solarium has been opened. Full le is allowed to 17 patients and limited parole nother 20. About half the nurses are certificated. e more having obtained their M.P.A. certificate ng the year, while three others passed the General sing Council's final examination.

ne eighteenth report of the *Scottish Western Asylums arch Institute* is somewhat unhappy reading, for doubtful whether the work can be carried on ss further funds are obtainable. Of its value e is no doubt, and a special meeting of the comee declared that it would be nothing short of a ster if the scheme were abandoned. There has r been enough money to provide for an adequate , and at least £2500 would be needed annually un the institute as it ought to be run. We rely hope that some solution of the problem be found. The routine work of the year has on the usual lines, except that the number of stigations for typhoid diminished considerably. ll, 1256 specimens were examined, chiefly for blood tests. Research has been carried out into the treatment of general paralysis and the chemistry of the cerebro-spinal fluid. A brief summary is given of the comparative results of treating general paralysis by various methods. Classes for medical officers have been held from time to time.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 25TH, 1928.*

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 141 (last week 114); scarlet fever, 1419; diphtheria, 816; enteric fever, 153; pneumonia, 514; puerperal fever, 48; puerperal pyrexia, 88; cerebro-spinal fever, 6; acute poliomyelitis, 15; encephalitis lethargica, 22; continued fever, 1; dysentery, 5; ophthalmia neonatorum, 129. No case of cholera, plague, or typhus fever was notified during the week.

The following counties each notified three or more cases of enteric fever:—London, 30; Essex, 37 (of which Colchester 31); Kent, 4; Lancaster, 11; Middlesex, 5; Norfolk, 3; Northumberland, 3 (Newcastle-on-Tyne); Southampton, 4; Suffolk East, 3; Surrey, 14; Sussex East, 4; Yorks West Riding, 5; Monmouth, 3. The total of 153 includes 46 cases of paratyphoid fever, of which 16 were notified in London and 11 in Surrey.

The cases of small-pox were notified from the following 18 counties:—London, 1; Derby, 14; Durham, 24; Essex, 1 (East Ham); Gloucester, 2 (Bristol); Lancaster, 7; Northampton, 10 (Northampton); Northumberland, 4; Nottingham, 3; Soke of Peterborough, 1; Stafford, 10 (Walsall); Warwick, 6 (Coventry); Yorks, East Riding, 4 (Hull); North Riding, 1 (Middlesbrough); West Riding, 30 (Goole 8, Pontefract 9); City of York, 1; Glamorgan, 9; Monmouth, 13.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on August 28th–29th was as follows:—Small-pox under treatment, 12; scarlet fever, 1495; diphtheria, 1499; enteric fever, 122; measles, 137; whooping-cough, 255; puerperal fever, 13 (plus 6 babies); encephalitis lethargica, 71; polio-myelitis, 2; "other diseases," 18. At St. Margaret's Hospital there were 18 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 5 (0) from enteric fever, 10 (0) from measles, 1 (1) from scarlet fever, 30 (5) from whooping-cough, 20 (1) from diphtheria, 89 (28) from diarrhœa and enteritis under two years, and 18 (4) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London were reported from Southampton, Coventry, Tynemouth, Newport, and Cardiff. Of the 10 fatal cases of measles 4 were reported from Liverpool, and in the same week 5 from Belfast. Of the 25 fatal cases of whooping-cough outside London 4 were reported from Birmingham and 2 each from Manchester, Preston, Bradford, Doncaster, Middlesbrough, and Sunderland, while Glasgow reported 5 that week. Of deaths from diarrhœa Liverpool reported 9, Hull 5, and Nottingham 4, while Glasgow and Dublin reported 6 each.

The number of stillbirths registered during the week was 244 in the great towns (corresponding to a rate of 37 per 1000 births), including 49 in London.

* The Returns printed on page 469 of our issue of Sept. 1st were incorrectly dated August 11th. The date should have been August 18th.

EXTENSION OF ST. BARTHOLOMEW'S HOSPITAL.—The annual report of the treasurer, Lord Stanmore, records the expenditure of over £60,000 upon the purchase of contiguous sites and premises which may eventually be needed for extensions. The new surgical ward block and operating theatres are in course of construction at a cost of £177,000, of which £85,000 has been received or promised. On recreation rooms for the nursing staff £13,000 is being spent. The income of the hospital last year was £194,948, of which £36,000 was derived from receipts on account of patients; the expenditure was £196,000, an increase of £14,000 over the preceding year. On the average in-patients stayed 21 days and cost £15 8*s*. 2*d*. each. The new out-patients numbered 75,000 and cost 13*s*. 6*d*. each. The nursing staff numbers 330.

Reviews and Notices of Books.

PHYSICAL DIAGNOSIS.

By CHARLES PHILLIPS EMERSON, A.B., M.D., Professor of Medicine, Indiana University School of Medicine. London: J. B. Lippincott Company. 1928. Pp. 553. 35*s*.

IT has always been difficult for authors to define the scope of the term which Prof. Emerson has chosen as the title of this volume. It is continually dinned into our ears that our fathers before us made their diagnoses without the adventitious aids which we now possess, but those who sing the previous glories of a golden age of medicine forget that the assistance of such aids has always been sought when available; at one period horoscopes were all the rage and the position of the planets more important than that of the fragments of a broken limb; the stethoscope was once regarded as a deplorable innovation, likely to destroy all the finesse of diagnosis. The stethoscope, the ophthalmoscope, and even the sphygmanometer have now been generally accepted as clinical aids; there still remain those who regard a microscope or a test-tube with suspicion.

Prof. Emerson is not in this group, but in his preface he does make a valiant effort to separate "physical" diagnosis from the other sort, whatever that may be. The effort has been made before and will be made many times again, but the result can never be quite satisfactory. The diagnostician will make use of such methods as he considers likely to assist him to his goal. These may comprise the exercise of palpation, the use of a thunder-box, the examination of a blood film, or the casting of a horoscope. Any of them may be supposed to constitute aids to diagnosis; but the art remains obstinately indivisible, and efforts to split it by definition are never satisfactory, since assistance which is scorned to-day may be recognised to-morrow as indispensable. Yet Prof. Emerson has produced a book both valuable and important, larger than most works of its kind, and packed with sound and interesting information. It is doubtful if "Ellis's S-shaped curve of dulness" ever afforded much information not available by the use of an exploring needle, and even Grocco's triangle is usually identified after the diagnosis has been established. But the author is an instructive guide, with a keen historical sense, and an ardent desire to impart information as to early diagnostic technique. It is good for a medical man of this generation to understand the steps by which the methods he uses daily at the bedside were developed, and to contemplate the difficulties which faced his forebears, though it may lead him to be thankful that he has no need to rely solely on his own powers of observation, and can call in help not available to them.

The illustrations are excellent, those in the section on the skin almost constitute an atlas of diseases of the integument, and the diagrams are clear and instructive. The book deserves a wide popularity among students and medical practitioners alike.

A TEXT-BOOK OF GYNÆCOLOGY.

By JAMES YOUNG, D.S.O., M.D., F.R.C.S.(E.), Physician, Royal Maternity Hospital; Assistant Gynæcologist, Royal Infirmary, Edinburgh. London: A. and C. Black. 1928. Pp. 338. 15*s*.

THE second edition of this text-book has been completely revised and alterations made to bring it into line with recent discovery. The section on the ovary and the relation of its cyclic changes to menstruation has been rewritten. The exposition of this part of the subject is now thoroughly up to date and is the best with which we are acquainted in any of the smaller text-books, as might be expected from an author whose own contributions to the physiology of menstruation have been so noteworthy. A brief section on endometrioma has been added, though clearer account of the work of J. A. Samps would probably have added to its value. Perhaps t author will consider whether, in a future edition, t chapter on "endometritis" should not be consid ably modified so as to bring it into line with the m recent views. Chronic metritis is described as synon mous with "fibrosis uteri," and although if t change were present it would be adequate to expl the chief symptom from which the patient suffers, does not represent the true pathology in the major of cases. Myomectomy and hysterectomy are the o alternatives recommended for fibroids that ha undergone necrobiosis during pregnancy, where experience shows that with expectant treatme most of these cases settle down and go on to ter The final short chapter on minor gynæcologi procedures is a most useful one, for it gives concise account of such procedures as vaginal dou ing, application of tampons, upon which the stude is apt to have rather hazy ideas. This book can thoroughly recommended to the practitioner and the student preparing for his final examinations. gives clearly what he wants to know, with the minim of unnecessary detail.

MODERN MEDICINE, ITS THEORY AND PRACTICE.

Edited by Sir WM. OSLER, M.D., F.R.S., THOM McCRAE, M.D., and ELMER H. FUNK. Vol. Diseases of the Nervous System—Diseases a Abnormalities of the Mind. Third editi London: Henry Kimpton. 1928. Pp. 9 £12 12*s*. per set.

SOME unevenness is to be expected in a w containing contributions by a number of autho but it is exceptional to find in a text-book of standing of Osler and McCrae's Modern Medic such grave inadequacies and inaccuracies as present in its sixth volume, that on diseases of nervous system, of which the third edition has j been published. Some of the articles in this, once be it said, are unexceptionable. It would an impertinence to praise Dr. Harvey Cushin contributions on "Cerebral Tumour" and "Hyd cephalus"; the editors may be congratulated having induced Dr. Cushing to put his unique exp ence within easy reach of the general practitio and the medical student. The articles by Gordon Holmes, Sir Farquhar Buzzard, and Dr. C. Symonds leave nothing to be desired. But, at other extreme, we cannot but condemn an art on subacute combined degeneration of the spi cord in which the statement is made that "the bl changes so commonly found in these cases are m often of the nature of a secondary anæmia than the pernicious variety," in which gastric ach receives no mention, and nothing is said concern treatment by the administration of acids or a li diet? The section on intracranial aneurysms is abstract of an article on this subject by Bead published in 1907. It contains no reference to m recent work, no mention of the congenital or emb origin of such aneurysms, and no adequate acco of the clinical picture which follows leakage of bl from the aneurysmal sac. The writer who d with trigeminal neuralgia has clearly no persc experience of treating these cases by alcoholic in tion of the Gasserian ganglion, or so at least it to be hoped, for he states that after the first inject two or three more are given within a week to comp the treatment, and that following the injection the p is relieved in "three or four hours." No descript of the technique of these injections is given. Th is unconscious humour in the mis-statement t tennis elbow is an occupation neurosis, and in quaint juxtaposition in one chapter of astasia-ab and adiposis dolorosa. The inclusion in one chap under the title Scleroses of the Brain, of dissemina sclerosis, pseudo-sclerosis, and tuberous sclero three conditions which have nothing in common

art of their names, is to return to the pathological look of a century ago. Other omissions are the ence of reference to the treatment of epilepsy by a ogenic diet, to encephalitis periaxialis diffusa, post-vaccinal encephalitis, while progressive icular degeneration receives an inadequate 25 s in a chapter on topical diagnosis. Those who ll the constant care of the late Sir William Osler t each successive edition of his own text-book uld contain the most recent additions to medical wledge will regret that his name should be asso- ed with a book which fails so signally in this ject.

THOLOGY OF THE NERVOUS SYSTEM.

Nouveau Traité de Médecine. Fasc. XVIII. Pathologie du système nerveux; sémiologie générale. By Various Authors. Paris: Masson et Cie. 1928. Pp. 812. Fr.85.

THE present volume of the elaborate Treatise of dicine appearing under the editorship of Prof. G. H. ger, Prof. F. Widal, and Prof. P. J. Teissier con- ns a number of articles on the general symptoma- gy of the nervous system, from the pen of a es of distinguished French and foreign neuro- sts. Three of the authors—Prof. Karl Petren, dame Dejerine, Dr. Charles Foix—have not d to see their contributions in print. Taken as a ole, the volume adheres to the accepted doctrines the French school of neurology, and in some jects, we consider, is not so up to date as it might

The article on apraxia (Dr. J. Lévy-Valensi) eats the rather artificial distinctions of Liepmann, ed on the no less artificial generalisations of rnicke. That on the aphasias, by the late Charles x, opens with the fear that to understand aphasia mpletely passes our ordinary comprehension and vers, and that in spite of its progress neurology never attain the desired end. It may be so, but least with the help of psychology some advance the present situation can be expected; yet the cle in question follows the clinico-pathological thod too slavishly to be of outstanding value. sections on the pathology of sleep are regrettably f and frankly insufficient; as far as we have erved the word narcolepsy is not mentioned. ether the psychopathologist of to-day will be pressed with the chapters on "Les Grands Syn- mes Psychiatriques" may be doubted; they take le cognisance of the developments of modern chopathology on the basis of psychological lysis, and, being almost entirely descriptive, are atisfactory from the viewpoint of ætiology and hogenesis.

uch criticisms, it may willingly be conceded, do detract materially from the many excellences of book; the long articles on disorders of motility, sensibility, and in the domain of the reflexes, are a high standard. The chapter on the cerebro- al fluid, by Prof. J. A. Sicard, is, as might be ected, admirable.

E EXTRA-OCULAR MUSCLES.

A Clinical Study of Normal and Abnormal Ocular Motility. By LUTHER C. PETER, A.M., M.D., Sc.D., Professor of Ophthalmology of the Medical Department of Temple University, &c. London: Henry Kimpton. With 98 engravings and 5 coloured plates. 1928. Pp. 294. 18*s.*

AFTER giving a full account of the anatomy and siology of the external eye muscles and of bin- lar vision, Prof. Peter devotes fully one-quarter of book to heterophoria, a subject which American lists have made peculiarly their own. Elsewhere importance of any considerable want of balance ween the vertically moving muscles is well recog- d, but it is generally thought that lateral errors uire treatment comparatively rarely. By far the monest lateral error is exophoria, of which Dr. er says: "There are few patients who will not experience discomfort with more than two diopters (prism-diopters) for distance and more than three diopters at the near-point." The treatment he advocates consists mainly in prism training by means of rectagonal prisms held before the eyes base cut. The training is continued at home with increasingly strong prisms until the patient is able to overcome the displacement produced by a prism of 70 diopters base out, a faculty which can only be attained after much practice. In esophoria, on the other hand, the author's experience is that prism training is disappointing. Nor is much good likely to come of ordering prisms, base out, for constant wear. When the patient is hyperopic, the main reliance must be placed on the correction of the refraction to as complete a degree as the patient will tolerate. Cyclophoria is usually connected with oblique astigmatism, and the accurate correction of this by glasses will in most cases abolish it. The rest of the book deals with concomitant squint, paralytic squint, and nystagmus. For training the fusion faculty the Worth amblyoscope is used either as a preliminary to operation or when possible without it. The author disagrees with those who wait until the child is 12 years old and operate under a local anæsthetic. He advocates early operation under a general anæsthetic when necessary.

There is little or nothing in the work about the details of surgical technique, but in other respects this book gives a good account of the causation and treatment of squint and its allied conditions.

THE EARLY DIAGNOSIS OF THE ACUTE ABDOMEN.

Fifth edition. By ZACHARY COPE, B.A., M.D., M.S., F.R.C.S., Surgeon to St. Mary's Hospital and to the Bolingbroke Hospital. London: Humphrey Milford, Oxford University Press. 1928. Pp. 244. 10*s.* 6*d.*

THE successful treatment of acute abdominal disease depends more than anything else upon early diagnosis. Mr. Cope's book places in the hands of the busy practitioner the means to acquire easily such knowledge as will enable him to distinguish the abdominal complaints demanding surgical remedies. Five editions within seven years can only mean that the author has supplied a real need. The descriptions of diseases and methods are vivid, terse, and simple; emphasis is laid upon essentials which stand out clearly in the mental picture aroused in the reader's mind. Minor revisions in each edition have added to the value of a book which is likely to remain as popular as it always has been.

A MANUAL OF PHYSICS.

Third edition, enlarged. By HUGH C. H. CANDY, B.A., B.Sc., F.I.C., Lecturer on Chemistry at the London Hospital Medical College; late Arnott Professor of Natural Philosophy in Queen's College, London. London, Toronto, Melbourne and Sydney: Cassell and Company, Ltd. 1928. Pp. 487. 7*s.* 6*d.*

THE author's Manual of Physics first appeared in 1911 and has been used by a large number of medical students since then. In its third edition it becomes a rather bigger volume and well covers the course required for any pre-medical examination in this subject. The author, in view of the introduction of the subject of the kinetic theory of gases into the syllabus of the Conjoint Board, has given some account of this theory. Most medical students will find this theory difficult to grasp, and we trust that examiners will not really expect candidates to have mastered its details.

The subject matter in the book is clearly presented and the illustrations are well selected. The colour plate of spectra as the frontispiece should prove a valuable map of reference to the medical student in his later studies.

A WEST INDIAN PEPPER-POT.

By T. R. ST.-JOHNSTON. With coloured illustrations by EVA WILKIN. London: Philip Allan and Co. 1928. Pp. 209. 10*s.* 6*d.*

THE Colonial Secretary introduces Colonel St.-Johnston's new book to the public, pointing out that slowly, but steadily, after long years of seclusion and stagnation, the West Indies are returning into the Imperial picture. Mr. Amery, therefore, holds that anything which tells us of the life of the general community in the West Indies is to-day worthy of attention. Colonel St.-Johnston, as the Administrator of St. Kitts-Nevis, is able to write from first-hand experience. And this experience he uses with skill and humour in 13 "Quashie" stories, "Quashie" being a sort of generic slang term for the West Indian peasant, as "Taffy" is for a Welshman, or "Pat" for an Irishman. Some of the stories are sensational, some are mystical, and some are both, and all help to set before us, as they are, an agricultural people in districts where agriculture reigns supreme, and where the Christy Minstrel type is non-existent. The illustrations are bold examples of modern colour-printing, and convey well the spirit and the messages of the stories.

MEDICAL VIGNETTES.

By T. F. DEWAR, C.B., M.D., D.Sc. Glasgow: Alex Macdougall. 1928. Pp. 73.

Dr. Dewar has republished a series of sketches first issued in the *Caledonian Medical Journal* and, in one instance, in *Chambers's Journal*. They are all well written, and many of the incidents form the right material from which to construct an episodal note or story. If this may be said especially of those which tell of occurrences during the war, the other vignettes have for the most part a message which was worth delivering—some medical lesson, perhaps of large significance, illustrated by a small every-day happening.

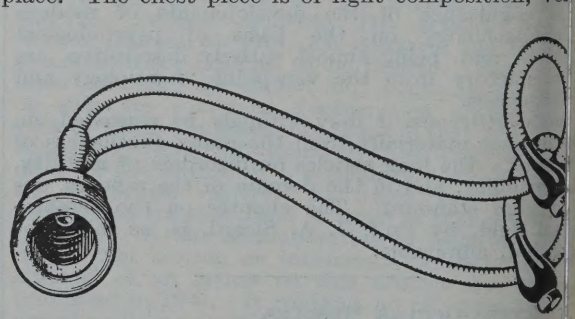
JOURNALS.

ANNALES DE MÉDECINE.—The June number is devoted to neurology under the direction of Prof. Guillain. The first article is a lecture given at the Salpêtriére by Dr. A. F. Hurst on Subacute Combined Degeneration of the Spinal Cord and its Relation to Pernicious Anæmia. Even though at the onset of the spinal symptoms no anæmia may be present, nevertheless the red blood cells show the increase in their average size which is characteristic of pernicious anæmia, and gastric achlorhydria is always present. Achlorhydria is the most important ætiological factor, since, in the absence of free HCl in the stomach, streptococci gain entrance to the bowel, and hence their toxins gain access to the blood and nervous system. Subacute combined degeneration is usually a consequence of a constitutional achlorhydria, but has also resulted from that of gastric carcinoma and of chronic alcoholic gastritis. Liver treatment, though it cures the anæmia, has, by itself, no influence on the progress of the spinal disease.—In the next article Guillain, Alajouanine, Bertrand, and Garcin describe a case of acute myelitis with optic neuritis. One of its peculiarities was the occurrence of a focus of degeneration in the subthalamic region, and this manifested itself clinically by frequent tonic crises resembling tetany, affecting the limbs of the opposite side to the lesion. In the eight months of its duration the illness showed several remissions and exacerbations; the first attack caused spastic symptoms and severe pains; the second, a month later, gave rise to the tonic fits; the third, three months later, left the patient blind; and the fourth, a few weeks afterwards, produced a state of flaccid paralysis and led up to the fatal termination. Detailed examination of the nervous system after death showed extensive foci of acute necrosis in the spinal cord, a focus in the subthalamic region, and another in the optic chiasma. The ætiological relationships of the disease are discussed.—Guilla and Thevenard, in a subsequent article, on t subject of Extracortical Jacksonian Epilepsy, descri four cases with typical Jacksonian attacks in whi no lesion of the cerebral cortex at the site indicat by the attacks was found at operation or pos mortem. They associate these cases with tho described by Spiller as subcortical epilepsy.—Guilla and Garcin contribute an important article deali with the syndrome of paralysis of all the crani nerves of one side; this is always due to sarcoma the base of the skull and yet there are no signs increased intracranial pressure nor of invasion of t brain by the growth. Three personally observe cases and one from the literature are given. T lesser syndromes resulting from injuries of grou of cranial nerves at their various foramina of ex from the skull are also briefly discussed.—Guillai and Alajouanine, in the next article, draw attentio to the occasional occurrence of somnolence as symptom of desseminated sclerosis; it always occu in an acute phase of the disease, and may give ri to difficulty in the differential diagnosis fro encephalitis lethargica.—In the last article Bertran and Hadzigeorgiou describe their technique for usin infra-red rays in the microscopic study of the nervou system; photographs are taken on specially sensitise plates and must be developed in complete darknes The effect of the long wave-length of the infra-re region is that there is little dispersion by the particl of the tissue and the power of penetration is cons quently very great; refraction is practically avoide by cutting out all waves less than approximatel 700 λ. Neuroglial elements and the intracellul structure of ganglion cells are remarkably well reveale by this method of examination.

New Inventions.

AN IMPROVED STETHOSCOPE.

WE have contrived and been using for some tim an instrument which combines the handiness of t pocket phonendoscope with the clear transmission the wooden stick stethoscope. As is shown in t illustration, the ear pieces are separate and made t twist well into the ears where they remain firmly i place. The chest piece is of light composition, ve



durable, and causes no such pull on the ears as do the usual heavy phonendoscope. The lumen of t transmitting tube is constant throughout, and t tapering at the joints between the tube and the che and ear pieces all dead space for "backwash" eliminated. The chest piece is protected by a rubb cap to ensure comfort for the patient and add clearness for the transmission. The essential distin tiveness of the instrument is its exceptional conducti and handiness for carrying about. It has the ad tional advantage of selling at a moderate price.

The stethoscope is made by Messrs. R. Sumn and Co., Ltd., 40, Hanover-street, Liverpool.

J. KILPATRICK REID, M.B., Ch.B. Liverp.
W. OWEN MORRIS, M.B., Ch.B. Edin.

THE LANCET.

NDON: SATURDAY, SEPTEMBER 8, 1928.

SCIENCE AND CRAFTSMANSHIP.

N reflecting on the miserable conditions under ch our primitive ancestors must have survived LLIAM JAMES has remarked somewhere that it haracteristic of man that he prefers life on any ns to no life at all. It is equally characteristic t he makes every effort to improve his circum-ıces, and if by "craftsmanship" we mean the l which is exercised in the production of whatever wanted for human welfare, then craftsmanship resents in a summary way man's effort to live. h is the meaning which Sir WILLIAM BRAGG puts the word in his presidential address delivered ore the ninety-eighth meeting of the British ociation for the Advancement of Science, which opened at Glasgow on Wednesday, Sept. 5th. f. BRAGG has charmed many audiences at the yal Institution with his explanations of and ımentaries on the intimate relation between dern scientific knowledge and the empirical ctice of old artificers, and the burden of his present course is that scientific training and scientific thod provide the craftsmanship of modern industry. ere is a cult which exalts the beautiful and efficient plement made long ago by hand, singly and pain-y, to a level which is wholly denied to the products the machine tools and factories of to-day—a cult ich often misleads itself by thinking that the rage excellence of past production is fairly repre-ted by the examples of old work which owing to ir exceptional quality have survived for us to see l use.

With such a point of view the President of the tish Association has very little sympathy; he s that the mass conditions of to-day demand for cess just that same combination of imagination, elligence, and manipulative skill which was needed en man was groping his way through the early ges of the development of what SAMUEL BUTLER aptly calls detachable limbs. Conditions have nged because what is knowable has outgrown the acity of one human mind to know, and specialisa-n has come in with, as always, some tendency to integration. The intelligence and imagination of dern production are now largely derived from se who pursue natural knowledge, and progress invention depends on the progress of science and degree to which use is made of its discoveries in practical world. LEONARDO or RÉAUMUR are possible to-day, but there is no reason why science l technology should not achieve equal triumphs if y can coöperate with such free friendliness as takes count of status or credit, if only the common good achieved. Empiricism is not the prerogative of hnology, nor coherent knowledge of natural nce. The wave theory of light is good because, some relations, it works; the electrical theory is o good because it also, in other relations, works. d no one so far has had the wit to see how the two ories may be reconciled. That such a state of airs should prevail in the branch of natural know-ge which has made the most notable progress in last 50 years testifies alike to the common manity of science and to the field which it offers intellectual adventure. In its applications to industry the opportunities for adventure are no less. "Thou shalt love the Lord thy God with all thy heart and with all thy soul and with all thy strength" means to the student of science that he is to put all he is into his work, knowing that every attempt to understand the world he lives in is worth while. And if he writes up, "Sirs, ye are brethren" as well, he will help his fellows all the better.

THE LATE RESULTS OF BREAST SURGERY.

Now that operation as the method of choice in treating cancer of the breast is being seriously challenged by the supporters of radium therapy, Dr. JANET LANE-CLAYPON'S survey[1] of the late results of various kinds of operation for growths at different stages is opportune. She has here freed the literature of breast surgery from the reproach, exposed by her previous analysis (No. 33 of the same series of grey books), that most of the statistics published are based on a follow-up after operation of only three years, which period she found to be the average duration of life in untreated cases. Surgeons will be gratified, if hardly surprised, to learn that on the whole the impressions derived from short periods of observation are confirmed; the lasting success of the Halsted technique or one of its modifications depends almost entirely on the stage of disease at which it is performed. The basis adopted by Dr. LANE-CLAYPON for calculating results is that of the net survival rate—that is, the proportion of survivors to those operated upon, after deducting entirely from the sample those not traced and also those certified as having died from causes other than cancer. Early cases, where the primary growth was undoubtedly malignant but microscopical examination showed no invasion of cancer glands (Group IP.) show the remarkably high survival-rate, ten years after operation, of 73·3 per cent. This rate includes partial operations, and rises to 77·2 if only those cases submitted to radical operation are included. In many other respects — such as the mean lowered fertility in the history, delay in seeking treatment, and the good functional results after removal of the pectoral muscles—the commonly accepted teaching is also confirmed. It is profitable, however, to examine this exhaustive study in order to ascertain in what respects the conclusions reached differ from those generally held. The lessons that the clinician may learn through the massed results from eight important county boroughs are noteworthy.

Broadly speaking, it seems that the clinical criteria of malignancy of a primary growth are reliable and need no revision. At least this is the deduction to be drawn from the direct evidence afforded by 364 cases where the diagnosis was not confirmed by a pathological report on the primary growth. The results following operation on these cases have been considered separately and have been if anything slightly worse than those of the confirmed cases. Indirect evidence, on which Dr. LANE-CLAYPON lays considerable stress in a closely written argument (Chapter 13), is less flattering to the clinician. Among the total number of cases in the survey there were 380 in which the malignancy of the primary growth was established histologically, though neither pathologist nor clinician could find any trace of invasion of the axillary glands; 370 of these were classified

[1] Reports on Medical Subjects, No. 51. Report on the Late Results of Operation for Cancer of the Breast, being an Analysis of 2006 Cases occurring in the Practice of the General Hospitals of Eight County Boroughs of England and Wales during the period 1910–1921. London, 1928, Ministry of Health, H.M. Stationery Office. Pp. 143. 3s.

in a table according to the operation performed, nine being discarded because the exact technique used was not recorded, and one for no stated reason. The five operating methods used were: 1 (244 cases), radical operation; 2 (45 cases), two operations—that is, removal of tumour or breast for pathological report, followed by radical operation at a later date; 3 (28 cases), removal of the breast, together with such of the axillary contents as could be taken without removing the pectorals; 4 (18 cases), amputation of breast only; 5 (35 cases), removal of tumour only. Dr. LANE-CLAYPON gives her reasons for considering that where methods 2, 4, and 5 were chosen—that is, in 98 cases—there must have been an original error in clinical diagnosis. In none of them is there a note of either a preliminary incision or a frozen section, and in several instances the first operation was performed in the out-patient department or by the patient's own doctor. From these and other considerations she assumes that the practitioners were reasonably satisfied as to the innocence of the growth. In one of the 45 cases where method 2 was used, duct papilloma had in fact been recorded, in another chronic mastitis, while 11, diagnosed as suffering from cysts, had in fact cysts, with small foci of cancer cells in the wall or in an intracystic papilloma. Incidentally, these cases provide instructive examples of the different microscopical appearance to be found in different parts of the same breast, to which Sir LENTHAL CHEATLE has drawn attention, and support his contention that a pathological report confined to the obvious tumour may be highly misleading. Statistically, the method of two operations gives results nearly as good as does radical operation at one sitting, but since a second operation is sometimes refused and much distress of mind often occasioned, it is recommended that in all cases tumours should be removed under such conditions that the surgeon can proceed at once to the larger operation if he thinks it desirable. Leaving for the moment consideration of method 3, we note that pathological reports on the 53 cases in which methods 4 and 5 were used indicate that the growth was very early. In 20 of them the clinical diagnosis was definitely that of an innocent condition, and it may be assumed that no surgeon would do such a very limited operation in the face of a suspicion of cancer. The data supplied in this report does not show the converse side of the picture—how many persons have had a radical operation for a benign growth. This may be relatively unimportant to those chiefly concerned with the public health, but the practitioner considering drastic operation for a doubtful tumour might pertinently ask the question. An educated patient who has been persuaded to have breast and pectoral muscles removed may await the pathologist's report with keen apprehension, but her relief when she hears that her tumour was a benign growth may well react on her faith in her medical adviser, especially if hers is one of the rare cases where the functional results are indifferent. It is possible, too, that when women are trained to report any swelling of the breast to their doctors immediately they notice it, the difficulty of clinical diagnosis will be greatly enhanced since the chief criteria of malignancy with which every student is familiar may not be apparent in really early cases. This is a bogy that need not yet cause alarm, for, unfortunately, the doctor rarely sees the disease at its inception, and the malignant nature of a primary growth is probably diagnosed more successfully in the breast than in any other situation.

The clinical estimation of the invasion of axillary glands is, apparently, far less satisfactory, and it is obvious that at an early stage of invasion th glands are not palpable. In Chapter 6 of her rep Dr. LANE-CLAYPON shows that while positive findi are for the most part confirmed by histologi examination, palpation is quite unreliable as a meth of assessing the condition of these glands. Of 169 cases in which examination at the bedside ga negative results, 90—or 53 per cent.—were incorre The import of this grave error is best seen in rega to the selection of operation. The third method Dr. LANE-CLAYPON's list consists of removal of breast together with such of the axillary conte as can be taken without removing the pectorals, a has evidently been chosen by the surgeon in t mistaken hope of saving from the radical operati those patients in whom the axillary glands are deem to be normal. The fate of patients operated on this method is, as Dr. LANE-CLAYPON puts it, surprisi and very deplorable, being much worse than th of those in whom either breast or tumour only w removed. The survival-rate after method 3 in t group of cases showing no clinical evidence invaded axillary glands is lower at all perio after operation even than the rate of the advanc group where the glands were definitely palpab There is, moreover, reason to believe that the ca operated on by method 3, far from being advanc were considered to be so doubtfully malignant as be suitable for a conservative operation. The co clusion reached is that the terrible results are d to the rapid spread of the growth following incisi into axillary tissue which contained undetect cancer cells, and that this operation should ne be performed. Evidence that clinical palpation the axillary glands is not reliable has another beari not mentioned in the report. Some surgeons of t younger school are inclined to despair of the possibili of eradicating the disease if the axillary glands already palpable, and are inclined to remove t breast only as a palliative measure. We call th attention to the fact that positive results of axilla palpation, though more accurate than negative on are too pessimistic in 17 per cent. of cases, and th the survival-rate after ten years, even of the gro where glands are easily palpable, is by no mea negligible if radical operation is performed.

COLLAPSE THERAPY IN PULMONARY TUBERCLE.

NEARLY half a century has elapsed since the fi tentative experiments in collapse therapy were ma but it is only in the last 25 years that the meth has been generally employed. In that period t treatment of pulmonary tuberculosis by artific pneumothorax has saved more lives than all the oth methods of treatment added together. By its mea those who would formerly have been regarded incurable have regained health, and the dying ha been restored to life. Time, which has seen the risi and setting of innumerable "cures," has only esta lished more firmly the value of pneumothora Unhappily, only a minority of the afflicted can bene by this method of treatment. Those suffering fro bilateral disease may obtain a measure of relief fro artificial pneumothorax, but in their case on temporary benefit can, as a rule, be expected, wh probably more than half of the unilateral cases a unsuitable on account of adhesions which bind t lung to the chest wall and prevent efficient collaps The greatest triumphs of collapse therapy have be obtained in the case of patients in whom the disea is limited to one lung and in whom the pleura is fre If these conditions are present, complete and lasti cure may be anticipated in a proportion of cas

a statistical study of the efficacy of artificial umothorax (A.P.) treatment, E. RIST and HIRSCHBERG [1] have endeavoured to ascertain the centage of cures in a series of cases treated at the nnec Hospital by comparing the after-history of ients so treated with that of others who did not mit to a similar course. The authors point out t the ideal method would have been to select a es of patients suffering from the same type of ase, to treat half the cases with A.P., and to deny treatment to the remainder. Humane con-rations made this impossible. It was, however, sible to divide a series of patients into two classes, se willing to receive A.P. treatment and those villing or unable to do so. The classes were not ctly comparable. Many of those who refused the itment were probably persons of low intelligence or cing in determination, for whom the prognosis is ally unfavourable. In others the presence of esions which rendered treatment impossible may e indicated some difference in the type of disease. he main, however, a fair comparison can be made ween the two groups.

he patients selected by the investigators for the ly were suffering from unilateral disease, tubercle illi were constantly present in the expectoration, in each at least half a lobe was shown by radio-m to be affected. 759 in number, they included all es of this type treated between 1912 and 1926. controls were 463 patients who did not receive '. treatment, either because adhesions prevented apse of the lung or because such treatment was ised. At the end of the period under review per cent. of the treated patients were "clinically led," free from symptoms, no longer expectorating ercle bacilli, and able to lead a more or less normal ; 32 per cent. were dead, and the remainder ier unbenefited or worse. Approximately 54 per t. of the controls had died. If the number of ients exhibiting signs of progressive disease be ed to the deaths, the advantage of the treated es is still more apparent, as the percentage for the ner is 44 while for the latter it is 82. It is note-thy that while many of the clinically healed group e able to work, and all had ceased to expectorate ercle bacilli, none of those who had refused treat-it was fit for employment, and most in this group e still infectious. As this first study included ients who had only recently commenced treatment, ultimate result of which could not be known, a her investigation was carried out on a group of es first seen between July 1st, 1919, and July 1st, 1. A period of seven years is thus available for ew. The figures obtained again demonstrate the it value of collapse therapy. The percentage of controls who were dead by the eighth year is 90, s being more than twice as high as the figure the treated cases. At this time 35·8 per cent. of treated cases were classed as healed. None of the reated cases had recovered and none was capable work. Among the treated cases nearly 50 per . of the deaths occurred in the first two years owing induction. After this period the mortality-fell, and no deaths were recorded after the fifth r had passed.

rs. RIST and HIRSCHBERG consider that the d "cure" should not be allowed until three years e passed during which there has been complete dom from symptoms and an absence of tubercle illi from the sputum. At this stage the question bandoning the refills may be considered. After the year the danger of relapse is small, and in many s it is desirable to maintain pulmonary collapse the completion of five years after induction. The ale mortality among both the treated and the reated cases greatly exceeded that of the males. s in the first year of treatment a female mortality 6·8 per cent. was contrasted with a male mortality ·3 per cent. They attribute this special suscepti-y of women to an inferior power of resistance, the result of the legal and economic inferiority of women which is still maintained in France by legal enactments and social institutions. The ages of the patients are not given, but from the type of cases selected for treatment it seems possible that the majority belonged to the early adult group. A high female mortality-rate is characteristic of this group in countries where women enjoy equal legal and social advantages with men. Unfortunately, nature cares nothing for sexual equality, and it is probable that physiological rather than social disabilities account for the more disastrous effect of tuberculosis among women in the earlier years of adult life.

[1] Paris Médical, 1928, i., 17.

Annotations.

"Ne quid nimis."

THE VITAL RECORD OF ENGLAND IN 1927.

WE gave in our last issue (p. 459) some of the outstanding figures of general and specific death-rates in England and Wales for 1927, as set out in Part I. (Medical Tables) of the Registrar-General's Review for that year. While awaiting the Text of this Review, which may be many months in coming, it is possible to make some comparisons of 1927 with the experience of previous years. The lowering of the birth-rate and of the rate of infant mortality have already been noted. As is well known, the lowered birth-rate is producing an altered distribution of the population according to age which ere long must lead (*ceteris paribus*) to a stationary or to an increasing crude death-rate at all ages, and it is not surprising, therefore, to find that this rate, which at all ages averages 15·4 in 1901–10 and 12·2 in 1921–25, has only declined to 11·6 in 1926 and 12·3 in 1927. This is the case, notwithstanding the fact that in successive periods of life, right up to 75, the death-rate per 100 living at each age was lower in 1927 than in 1906–10. The Review enables each medical officer of health to ascertain his official position in regard to infant mortality as compared with that in other sanitary districts. We have once more to draw attention to the contrast in respect of death-rate in infants under 4 weeks of age in different parts of the country. In London during 1927 the death-rate during these four weeks was 24·4 per 1000 births, but it was 34·5 in the aggregate of all county boroughs. A study of detailed causes of death, as stated in the tables of the Review, gives some imperfect idea of the extent to which this mortality was preventable in character. The excessive mortality occurred chiefly in the North of England and in Wales; nor in these more rugged regions was it confined to the large centres of the population, but characterised also their rural areas. Table XIII. in the Review makes a more detailed comparison possible. Thus, comparing county boroughs with each other, the following extremes are noteworthy. At ages under 4 weeks the death-rate in Blackpool, Newcastle, and Sheffield was 40, in South Shields it was 42, in Dudley, Swansea, and Huddersfield 44, in Gateshead 46, in Oldham and in Preston 47, and in Burnley 49, while in Bath, out of every 1000 born alive, the number lost under 4 weeks only numbered 20, in Bootle 25, in Brighton and Croydon 26, and in Eastbourne only 17. The possibilities of preventive medicine for this early period of infancy are far from exhausted.

Table VI., comparing the incidence during a long series of years of the death-rate from the chief infectious and general diseases, is always of great interest. It is noteworthy that the death-rate from total tuberculosis for two years in succession has been well below 1 per 1000 of population, and there is no indication that the limits of decline—if they exist—are being approached. Encephalitis lethargica unfortunately maintains its place in the list of causes of death; and it is not without interest to compare its magnitude with that of enteric fever which no longer

ago than 1896–1900 was responsible for a death-rate of 176 per million persons living. Compare this with the rates for the year 1921 when separate returns for encephalitis lethargica became available, and for the six subsequent years—

Enteric fever	16 ..	12 ..	12 ..	13 ..	10 ..	9 ..	9
Encephalitis lethargica ..	19 ..	9 ..	13 ..	36 ..	34 ..	32 ..	28
Diabetes	90 ..	99 ..	92 ..	87 ..	88 ..	89 ..	95

We have added a column dealing with diabetes, on which a recent report of the Registrar-General contained a valuable study in detail.

A note may be made, in conclusion, on the tables of cases of infectious diseases notified to medical officers of health during 1927 in each sanitary area. It would be interesting to ascertain how many or, rather, how few, medical officers see these tables tucked away in the last pages of a volume for which the non-official purchaser must pay 15*s*. Their public health value is great in reviewing the experience of each year and in comparing this experience with that of other areas. They are valuable finger-posts, indicating where further investigation is needed from an administrative standpoint; and their value as implements of epidemiological research rises year by year. We take this opportinity of emphasising the importance of these tables to every medical officer of health in the country.

THE USE OF WELCHII ANTITOXIN IN ACUTE OBSTRUCTION AND GENERAL PERITONITIS.

THE actual cause of the toxæmia in cases of acute intestinal obstruction and general peritonitis remains obscure, and attempts are continually being made to elucidate it. Gatch, Trusler, and Ayres [1] consider that the toxæmia following obstruction is due to the absorption by a damaged mucous membrane of toxins which would not be absorbed by the normal mucous membrane. Further strangulation ensures the development of an ideal culture medium for the rapid proliferation of pathogenic bacteria, and the gases resulting from putrefaction cause increased pressure within the lumen and so increase absorption. Dragstedt [2] and his collaborators have shown that experimentally closed loops of duodenum or jejunum prove rapidly fatal unless drained from the outside, and further, that if closed loops of intestine are first washed with ether or an astringent wash the obstruction is not fatal to the aninal. All these observers agree that death is caused in cases of strangulated bowel by conditions which increase the absorption of toxins, the actual nature of which toxins being still undetermined. Working in the Clinical Surgical Unit of St. Thomas's Hospital, B. W. Williams [3] attempted to demonstrate the presence of a true bacterial toxin of intestinal origin and to indicate its nature and the conditions of its development. Struck by the clinical similarity between the toxæmia in acute obstruction and general peritonitis, and the toxæmia of gas gangrene, he was led to investigate the development of *B. welchii* in the two first conditions. He showed that there is evidence of immense proliferation of *B. welchii* in the contents of the small intestine of patients with acute obstruction and peritonitis with stasis, and also of the presence of the exotoxin of the organism; the clinical aspects of patients, the occurrence of intravascular hæmolysis, and the microscopical changes in the heart and liver of fatal cases suggest that absorption of toxin has taken place. The truth of his hypothesis appeared to be confirmed by the results of a therapeutic test of *B. welchii* antitoxin at St. Thomas's Hospital in cases of acute obstruction and general peritonitis. A comparison of cases so treated with a control series showed definite lowering of the mortality and alleviation of the symptoms and clinical signs of toxæmia, even allowing for the difficulty of prognosis before treatment and therefore of assessing its results. Following the publication of Williams's paper, Bower and Clark [4] have used *B. welchii* antitoxin at t Samaritan Hospital, Philadelphia, in 25 cas Eleven of these suffered from acute diffuse suppur tive peritonitis, nine had acute intestinal obstructio and five were cases of acute suppurative cholecystit in which the process had extended to the peritoneu or pancreas. In the first and second of these grou the authors were able to substantiate the claims ma by Williams. The patients treated with antitox were less restless, consciousness was less acute, t pulse-rate was diminished, the temperature w reduced, distension became less, and the intestin were evacuated earlier. Two cases in the thi group also appeared to derive benefit from the an toxin. The small number of cases treated and t wide variation possible in the type of case chosen f treatment by different observers make percenta mortality figures useless for comparison with tho from another institution. The fact that worke under quite different conditions have obtain confirmatory results suggests that Williams's hyp thesis should be followed up and given further tri for if surgical treatment of intestinal obstructi can be supplemented by a trustworthy method combating toxæmia, its high mortality should considerably reduced.

[1] Surg., Gynec., Obst., 1928, xlvi., 332.
[2] Jour. Exper. Med., 1919, xxx., 109.
[3] Brit. Jour. Surg., 1926, xiv., 295.
[4] Amer. Jour. Med. Sci., 1928, clxxvi., 97.

MEDICAL PROBLEMS IN AERIAL WARFARE

THE Kellogg Treaty recognises that war is n inevitable, while responsible statesmen must explo every avenue to prevent its occurrence. Almo simultaneously with its signature the aerial manœuvr round London have reminded us that, though t contingency of war may appear remote, there is weapon forged which can strike with swiftness a effect into the heart of a nation—a weapon, moreov that can be immediately mobilised from the rapid increasing supply of commercial aircraft. We a reminded by a correspondent of the medical proble that might arise in future conflicts in the air. "the outbreak of the last war," he writes, "we had breathing space, for which the late Lord Halda was largely responsible, in which to gather our f fighting strength, but in the future, with a rap declaration of war and perhaps an equally rap decision, we shall stand or fall by our degree preparedness at the actual moment of the commen ment of hostilities. Though, with the majority of c countrymen, medical men hope and truly believe better things, we should be false to a trust if we fail to point out certain aspects of the question. Wh the care of the sick and wounded in our home tow will be largely in the hands of the men on the sp none can say exactly where a blow may be deliver The attack may quite as easily fall on some sm country town as a large city; the object of bomba ment from the air, comprising high explosive, inc diary and gas bombs, may be intentional or unint tional at any particular spot. The actual concentrati of gas is immaterial; it may disable by killing or sickness, but whichever it is it must be dealt w energetically and at once." These things are sa true. The hospitals are almost without except situated near the bull's eye—for the target will alwa be the large city, and they may for this very reas become useless. The victimisation of the sm centre will be accidental, and the real problem v be to evacuate the hospital patients as well as oth casualties into some gas-free zone, and a clear idea therefore desirable as to the best procedure.

Ought this to be a matter of immediate attent on the ground that if organisation is not arran while it is not needed, when it is needed the preparati will be too late? Our correspondent writes furth "We shall discover the necessity for doctors a nurses to understand all the details of anti-gas prec tions, but far larger matters are at issue. The sit of temporary hospitals on high ground to windw at the shortest possible distance from the town i matter which needs thought. Conditions such as

ilability of suitable transport, the means of d loading and dispatch, the adequacy of roads from a crowding exodus of other citizens, and facilities for light and water will materially affect sions on this important point. I believe, and ers share the view, that each medical officer of th should in consultation with the local profession the hospital authorities have ready and prepared ries of schemes suitable for various contingencies n as prevalent wind, extent of attack, and numbers ersons affected. These schemes should be known ll concerned so that the broadcasting of a code d will immediately set in operation an orderly ience of events." This implies that the time has e for all ambulance workers to be trained in -gas drill, all drivers of emergency transport to be ilarly instructed, and all doctors and nurses to w what is expected of them, and it is hard to say it is more unreasonable to prepare for air attacks ch may never come than to have fire drills in dings where fires are not likely to occur. When are told that these things can go forward without uly alarming the civil population in the same way neasures are taken quietly to deal with possible breaks of infectious disease, we do not agree, le certainly it will be hard to raise enthusiasm for sures which may never be needed. But such cautions would offer no provocation to other ions, a criticism which can be levelled against nsive preparations. They would show that having ised a possible and serious danger we are taking apposite measures.

TISSUE IMMUNITY.

By republishing in book form various contributions nedical journals and conferences which he has made ce 1898, Alexandre Besredka has summarised years of work of research on immunity from the ventive and curative side of vaccine therapy. use this term in its widest sense. Some of the ier chapters of the book awaken memories of ttles long ago "—Metchnikoff and phagocytosis, diversity of the streptococcal species, antistrepto- cal serum and others. But perhaps the most resting of all the numerous subjects which the hor treats in his clear and lucid style are the later s which deal with his now well-known theories h regard to clinical immunisation by the cutaneous, cal, and intestinal portals of entry. Prof. redka's method of immunisation by the sensi- tion of the gastro-intestinal tract with bile previous he ingestion of vaccine or anti-serum is now well wn. In France, where prophylactic typhoid cine is extensively administered in this way, method may be said to have passed the experi- ital stage. A considerable amount of statistical dence of its efficacy is now available. The method obvious advantages to make it attractive to the ician, but the rôle of the bile in gastro-intestinal terial infections is only dimly understood at sent and there is need for a good deal more erimentation, especially combined team-work of siologist and bacteriologist, before complete ance can be placed on the method as a satisfactory rnative to the now well-established subcutaneous culation. Laboratory animals, unfortunately, are entirely suitable for the work and the actual s of this tissue immunisation, if true immunisation e, have not yet been worked out, and precisely far the humoral phenomena of immunity, cipitins, agglutinins, and the like are affected by se methods cannot yet be estimated.

We have dealt at some length on two previous asions [1] with Prof. Besredka's theories on tissue nunity in relation to the skin and the gastro- stinal tract. Briefly, he considers that the body ends itself primarily by a local reaction in the ue through which the micro-organism gains access the body, and he has elaborated his thesis with numerous experiments with *B. anthracis* and other organisms. Much yet remains to be done before a conclusive opinion can be expressed. No one can look at a histological section of the skin in a case of leprosy without being impressed with the local powers of phagocytosis. Similarly the extensive work of A. S. Griffiths [2] over a long period of years has shown that in lupus there is a frequent modification of the pathogenic properties of the tubercle bacillus which are probably the result of adaptation of the bacilli to the resistant action of the skin. Other examples might be quoted, notably a long series of investigations by A. K. Krause [3] on guinea-pigs with tubercle bacilli. But the histological side of the picture, the questions of absorption and lymphatic drainage, local antibody production, and so on, have not yet been exhaustively explored.

[1] THE LANCET, 1926, i., 766 ; and 1927, ii., 73.

SECOND INFECTION IN SYPHILIS.

ALTHOUGH a second infection of syphilis in man had occasionally been reported before the introduction of salvarsan, it was only after the use of the arsphenamins had become general that examples became at all frequent. The diagnosis of a second infection is by no means free from pitfalls. The *chancre redux* which appears at the site of the original primary lesion many years later, and may be followed by cutaneous manifestations simulating the secondary stage, is really a gummatous lesion. C. R. L. Halley and H. Wasserman [4] have recently published observations on collected reports of 676 cases of second infection. The majority failed to satisfy the criteria which these authors considered necessary to establish both the first and the second infection. To the 229 examples which were found to be acceptable as true cases of second infection, the authors have added eight cases under their own observation. On analysis 97 per cent. of these cases were found to have received treatment with modern remedies early in the course of the first infection. No example of second infection could be found in cases whose first infection remained untreated until the tertiary stage ; only one instance of a congenital syphilitic acquiring a second infection was noted. The rarity of second infection in women (only 3·3 per cent. of the total) is in keeping with the general experience that the majority of women come under treatment at a later stage of infection than men. Halley and Wasserman point out that the number of second infections diminish as the interval between the onset of infection and the commencement of treatment increases. Similar observations have been made in the experimental syphilis of rabbits. Recent researches on immunity in syphilis have shown that reinfection in man does not constitute certain proof of the complete cure of the original infection. The occurrence of superinfection following inoculation with material containing spirochætes in the very early stages of human syphilis and in experimental syphilis in rabbits is also well known. G. Mestchersky and S. Bogdanoff, [5] who have recently reported the effects of experimental inoculation in various stages of human syphilis, achieved results which led them to conclude that superinfection is possible at all stages of syphilis. But the lesions in their successful cases were those of a modified infection ; no characteristic primary lesions were produced, nor was there any evidence of generalisation of the infection. Their experiments, like those of Finger and Landsteiner, [6] in which the inoculation with spirochætes of cases in the tertiary stage resulted in lesions of tertiary type, indicate that the tissues are refractory to second infection but that immunity is not absolute. It is of interest to recall that experimental inoculation of rabbits already infected with syphilis is successful in a much higher

[2] Tubercle, 1923, v., 569.
[3] Amer. Rev. Tub., 1926, xiv., 211.
[4] Arch. Int. Med., 1928, xli., 843.
[5] Urolog. and Cutan. Review, 1928, xxxii., 230.
[6] Quoted by A. M. Chesny, Immunity in Syphilis, London, 1927, p. 22.

percentage of cases when a heterologous strain of spirochæte is employed than with a homologous strain. The refractory state towards a second infection in rabbits, which develops in time, is more marked towards the homologous strain than a heterologous strain. Second infection in cases of neuro-syphilis would, if frequent, add support to the existence of dermotropic and neurotropic strains of spirochæte; but Halley and Wasserman were unable to find any tenable reports of such reinfection. The increasing number of reported cases of second infection in man, and their preponderance among those who received treatment with organic arsenical compounds in the early stage of the disease, support the claim made for these remedies of producing complete sterilisation in early syphilis.

BLOOD FORMATION.

USING the bones of fœtal and young guinea-pigs and rabbits, Prof. Witherington Stump, of the Department of Anatomy of the University of Sydney, has recently reinvestigated the problem of blood formation, so far as it takes place in the red marrow. Prof. Stump found this type of material particularly well suited for investigation, and expresses surprise that previous workers have so seldom used it. The results, which appear in a recent number of the *Medical Journal of Australia* (1927, ii., 702), contribute few new facts but constitute a valuable commentary on the present state of our knowledge of blood formation. Prof. Stump finds himself most closely in agreement with the views of Dantschakoff and Maximow on the genesis of the various cells produced in the red marrow; he is a convinced and thoroughgoing monophytist, believing that all the peculiar cells of the red marrow, even to the megakaryocytes, are produced from a common stem cell. This cell he believes to develop by direct maturation of certain of the indifferent mesenchyme cells; the remaining mesenchyme cells finally produce the reticular system in which the differentiated stem cells then come to lie. These stem cells occurred abundantly in the tissues used by the author; they are described as possessing a large deeply staining nucleus, with abundant chromatin and a strongly basophile cytoplasm. From this cell the author was able to trace the development of red cells, granulocytes of all three orders, and megakaryocytes—the monocytes apparently did not come within the purview of the study. The article contains some valuable hints as to technique for those wishing to follow a similar line of investigation, for Prof. Stump is one of those rare individuals possessing a simplifying mind. He keeps his descriptive terms within strict limits, and has a hard word for the "unwieldly terminology (of hæmatology) which has passed beyond the limits of scientific application." It is, however, possible to be too simple, and it is to be hoped that Prof. Stump will in due course publish more detailed descriptions of his researches.

SINGULTUS EPIDEMICUS.

THE occurrence of epidemics of hiccough associated with influenza has been reported now and then; an interesting account of six cases during the epidemic of 1926–27 in Czechoslovakia is given by Dr. B. Kuklová,[1] the first woman to hold a chair of medicine in that country. The accompanying influenza epidemic lasted from Nov. 1926 to March 1927, affecting mainly persons between 20 and 30 years of age. Hiccough occurred in four women and two men, all between 18 and 28 years of age, with the exception of an old man of 65. The onset varied: in three cases the hiccough was the first and only sympton, in two cases it set in with a raised temperature and catarrhal symptoms, and in one it was associated with an exacerbation of an already existing digestive disorder. The hiccough in every case was extremely resistant t treatment. Sleep was always disturbed and t sugar in the cerebro-spinal fluid was increas There were present also myoclonic contractions wh affected both halves of the diaphragm, the muscles the upper part of the chest, the throat, the exter eye muscles, and eventually those of the extremiti In two cases the respiratory rhythm was disturb after the hiccough had passed off, or between t attacks, and in one case compression of the eyeb produced apnœa. The first attack of hiccough last from one hour to 14 days, most frequently being th to four days in duration. In four of the patie subsequent attacks developed some weeks later. T shortest duration of the illness was seven days and t longest 110 days. In four of the patients there wa well-marked hysterical element. In the chronic ca galvanism of the phrenic nerve was employed w success in treatment. Attempts to transmit t disease to rabbits and guinea-pigs failed, although t presence of an infective agent in the nasal and na pharygeal mucus of the other influenza patie had been proved by experiment. These ca of hiccough raise interesting points for stud there is a close parallelism between many of t associated nervous symptoms and those occurr in or following epidemic encephalitis.

[1] Bratislavské Lekarske listy, r.VII., s.3. Summary in French, English, and German.

ALBRECHT VON GRAEFE.

FEW in surgery, and none in ophthalmic surge have better deserved than Albrecht von Graefe t familiar apostrophe "E tenebris tantis tam clar extollere lumen qui potuisti." In his short life 42 years he revolutionised much of ophthalmolo His glaucoma operation has stood the test of ti while his cataract knife is used daily throughout t world. In this country his name is always coup reverently with those of Bowman, George Critch and Donders. The four were great friends; Bown and Critchett were mainly responsible for placing science of ophthalmology on a sure basis in this coun and von Graefe did a like service for it in Germa This is von Graefe's centenary year. He was born Berlin a hundred years ago; he was the youngest s of Charles von Graefe, a well-known surgeon of day in Germany. His father died while he was in childhood, and he was largely dependent for upbringing on his mother's care. After the usual cou of study at Berlin he spent some time in the cl foreign clinics, notably under Arlt at Prague and Vienna. To Arlt is said to belong the credit for hav first turned von Graefe's attention to ophthalmolo He also visited the British Isles and spent some ti in London, Edinburgh, and Dublin. Ample priv means sometimes have a soporific effect upon a yo professional man, but they had no paralysing ef upon von Graefe, who built a hospital of his own a rapidly acquired a tremendous reputation not only Germany but throughout Europe. He was lucky starting on his ophthalmological career at a propiti time; in 1851 von Helmholtz gave to the world epoch-making discovery of the ophthalmosco Von Graefe was quick to see the enormous adv tages that would accrue to those who made themsel familiar with the new instrument. He is credited w having announced in an address that "Helmh has opened a new world." This appreciation of ophthalmoscope on the part of von Graefe is in mar contradistinction to that accorded by Wharton Jo a few years earlier, when shown a similar model of ophthalmoscope by Charles Babbage. Not cont with an enormous practice, von Graefe founded, in 18 the *Archiv für Ophthalmologie* and ran it single-han for the first year. In 1855 he was joined by Arlt a Donders in the editorship. From that date until death hardly a number of this journal appeared with containing a communication by von Graefe, and 1857 he gave his famous work on iridectomy "Glaucoma, and on the glaucomatous process" the world in its columns. It can safely be said t

papers have had a more far-reaching effect than one in question. Literally hundreds of thousands yes have been saved from permanent blindness by Graefe's work. He died suddenly in 1870 while Franco-Prussian War was in progress.

LADY OSLER.

HE death of Grace Osler, widow of the famous ius Professor at Oxford, has evoked expressions egret from a remarkably wide circle. The number uests, medical and literary, to whom Sir William ensed at Norham-gardens an unending hospitality ld be surprising if it were known, and Lady r, as his wife, was responsible for their enter- ment. The house was nearly always full, for y doctor who visited England from America or ada, and most of those who came to our shores the continent, considered it a duty and privilege "look up Osler and his wife." Grace Revere, y Osler, born 74 years ago at Boston, was the t-granddaughter of Paul Revere, the hero of the ous ride. As a young woman she married Dr. W. Gross, a professor of the Jefferson Medical ege, Philadelphia, and the son of Samuel Gross, famous American surgeon. She was left a young ow in 1888, and four years later married William r, who, having come south from Canada, was ing his famous reputation as a scientist and sician at Baltimore. For 13 years Lady Osler her husband's helpmate at Baltimore; then, in 5, came the appointment to the Oxford chair, from the moment that Osler and his wife arrived he old University city it was seen how admirably y were fitted for what they made into a joint rt. A well-known Oxford professor writes of her: ie was an instant success and their home became ntre of attraction, drawing all sorts and condi- is of men from every quarter of the globe, the most ed and famous mingling with the youngest under- luates arriving to present letters of introduction. house was also converted into a veritable home many of the Rhodes scholars, and not a few of se will remember with affection and respect the she bestowed upon them, her valuable influence her practical help—things which greatly assisted romoting the success of Cecil Rhodes's scheme." outbreak of war found Lady Osler in America, she returned immediately and threw herself le-heartedly into all the activities connected with succour and treatment of the wounded, while, ugh her influence in America, she was from the inning able to obtain great sums of money to y on various schemes. As is well known her only was killed at St. Julien, but stricken as she was, only bestirred herself to help with more intimate perfect sympathy those who could not help them- es. She was an ideal companion to her husband. less in promoting the interest which he had at rt, it was felt, therefore, by everyone that her ointment at Sir William Osler's death as Trustee he Ewelme Charity was thoroughly fitting; the tership of Ewelme in connexion with the Chair of sics had been a mediæval appointment which made a special appeal to Sir William Osler.

HE DEVELOPMENT OF OBSTETRICS AND GYNÆCOLOGY.

HE three subjects chosen for the discussions at diff, reported on p. 521, indicate how greatly responsibilities of the gynæcologist have increased e the days when etiquette restricted his operative vities to the perineum. The diagnosis and tment of sterility, the differentiation of acute ditions in the pelvis by laparotomy if other methods , and the actual technique of radium therapy all ie within his accepted sphere. An important ilt of the development of gynæcology has been the clear demonstration that too large a proportion of the commoner diseases of women, notably salpingitis and prolapse, are often traceable to unsuspected infections of venereal disease, or to unscientific midwifery, both of which causes may have long-delayed effects. Venereal disease is now being resolutely attacked, but the practical teaching of obstetrics, as we have recently pointed out, still needs even closer attention than has been given to it by most of the licensing bodies. Dr. George Peachey reminds us in his letter (p. 530) that in the first part of the eighteenth century a licence for the practice of midwifery had to be obtained from the Bishop of London, but that in 1783 the College of Physicians took cognisance of practitioners of that art and instituted for a short term of years only a distinct order of licentiates in midwifery. It is not to be doubted that interest in obstetrics will be stimulated by the reinstitution of a special diploma such as that now granted by the Society of Apothecaries of London. A historical review [1] of the achievements of the nineteenth century in the field of gynæcology and obstetrics, recently published in Vienna, is opportune in view of the efforts now being made to secure for obstetricians and gynæcologists a status appropriate to the range of their specialty. Dr. Fischer's survey, undertaken with the patience and thoroughness that marks the whole of the vast text-book of which it is a part, covers every department of the subject, section by section, and refers to every book and paper worth reading that appeared during last century. The bibliography alone fills no less than 41 pages of small type. Nearly all the vast network of scientific investigation which has culminated in the institution of chairs of gynæcology and obstetrics of every university, with laboratories in which anatomy and physiology of the normal and pathological reproductive organs are constantly being studied, has grown up since 1800. The results of the works of Lister, Koch, and Semmelweis, and the discovery of the nature of micro-organisms, have in no other department of medicine been of more vital import for prophylaxis, diagnosis, and therapy. The discovery of the application of general and local anæsthesia in conjunction with aseptic technique, and the later discoveries in serology and radiology, have been as useful to the gynæcologist as to the general surgeon.

Dr. Fischer's synopsis is not light reading, but the reader intent on tracing the evolution of any aspect of midwifery or gynæcology through the age most critical for its growth, will find it an admirable guide. He will notice the gap between 1899, when the survey ends and the present day, the more for the guidance he has had through the preceding century. This century has been of even more interest than the last and has witnessed a progress twice as rapid as that which Dr. Fischer chronicles. It is to be hoped that this volume may be supplemented by an account of the development of obstetrics and gynæcology in the first quarter of this century.

EDUCATION AGAINST TUBERCULOSIS

THE National Association for the Prevention of Tuberculosis has been successful in its appeal for £100,000, and thanks to the funds thus provided extensive propaganda throughout the country is now being undertaken. The report of the Association for the year 1927 which has just been issued gives some details of the educational work which is in progress under the guidance of the medical commissioner, Dr. William Brand, and three assistant medical commissioners who were appointed last year. They have all been actively engaged in different parts of the country, where they have aroused interest and

[1] Biologie und Pathologie des Weibes. By Priv. Doz. Dr. J. Fischer. Lieferung 44. Edited by Hofrat Prof. Dr. Josef Halban, of Vienna, and Geh. Hofrat Prof. Dr. Ludwig Seitz, of Frankfurt a.M. Berlin and Vienna: Urban and Schwarzenberg. 1928. Pp. 284. M.15.

enthusiasm. Each lecturer is accompanied by a caravan fitted with exhibits consisting of models, photographs, pictorial posters, and literature; a cinema projector with lantern attachment is carried along with films and lantern slides. Already a considerable part of the country has been covered, and everywhere the closest coöperation with local health authorities and voluntary organisations has been secured. The particular objects of these educational campaigns may be described as two-fold. There is, first, the prevention of infection by attention to general hygenic principles, and special precautions in the event of the disease being present in a member of the family; secondly, there is the education of the public to know what to do when afflicted by tuberculosis, including the life to be led after sanatorium treatment. The films used by the lecturers illustrate these two main objects. "The Invisible Enemy," deals with the prevention of the disease, showing by means of a story, of a mother and h dying son, what must be done to avoid the disea "The Story of John M'Neil," features the eradicati of tuberculosis in a family on the Edinburgh syste "A Day in a Sanatorium" and "Burrow Hill Colony paint sanatorium life and its extension in the colo idea. The Association aims at letting the pub know that early treatment of the disease is essenti and its educational work is partly concerned with t "warnings" of the disease and the facilities f treatment. It is also directing some of its energies educate the "fool" who, it has been said, can nev be cured of tuberculosis—unless, that is, he is fi cured of his folly. The dangers of milk and the soc problem of tuberculosis are also dealt with, so that very wide field is covered. With the impetus given the success of the recent appeal, the Associati should be able to carry out its ambitious programm of educating the whole community.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

II.—REPORTS ON SWABS FROM THE THROAT AND NASAL PASSAGES.

By J. E. McCartney, M.D., Ch.B., D.Sc.,
DIRECTOR OF RESEARCH AND PATHOLOGICAL SERVICES, METROPOLITAN ASYLUMS BOARD.

(1) Cases Suspected of Diphtheria.

It is the habit of many practitioners, when there is any acute inflammatory condition of the throat, to take a swab of the throat and send it to the laboratory for a report. Often there is no information furnished regarding the patient, and when such information is sent it is often meagre and of little or no assistance. The clinician frequently waits for the laboratory report before instituting treatment, and his whole conduct of the case is usually guided by the pathologist's findings in the material sent. Many practitioners regard the laboratory report as infallible, and in so doing are content to assume that the responsibility of diagnosing the case must rest with the pathologist. This attitude is misleading and dangerous. The pathologist can assist the clinician by giving certain information, which must be considered in relation to the condition of the patient. The practitioner himself must assess the value and significance of the pathologist's report with regard to each individual patient. Half a dozen identical reports may be issued from a laboratory, but the interpretation of them may be absolutely different in each case. It is the object of this article to try and indicate what significance should be attached to various laboratory findings in respect of these swabs according to the clinical condition of the patient.

Klebs-Löffler Bacillus (K.L.B.).

The great majority of throat swabs are sent to the laboratory in order to ascertain whether the diphtheria bacillus is present or not, and great care should be exercised by the practitioner in taking the swab that material is obtained direct from the lesion.

Laboratory Technique.—The technique usually employed is to inoculate a tube of Löffler's serum, which is then incubated at 37° C. for 18 to 24 hours. In addition, two direct films are made from the swab, and one is stained and examined for the diphtheria bacillus, while the other is stained with dilute carbol-fuchsin or methyl-violet to determine if the organisms of Vincent's angina are present. In a proportion of cases positive results may be obtained immediately by an examination of direct films, but cultures must also be made as a routine.

After incubation, films are made from the cultu and stained with the particular diphtheria stain use in the laboratory, which may be Löffler's meth lene blue; Neisser's stain (either the original meth or a modification); Pugh's acetic acid—toluidi blue; or Albert's method, which is a modificati of Pugh's stain. The particular stain used depen entirely on the choice of the individual bacteriologi and should have no influence on the accuracy of t report.

The stained films are examined microscopical and the characteristic beaded appearance of t diphtheria bacillus makes its recognition easy definitely positive cases. A number of bacilli of t "diphtheroid" group resemble the diphtheria bacil more or less closely, but a competent bacteriolog can usually discriminate between them with confiden

The Significance of Positive Reports.

The report as to the presence of diphtheria bac is made from the microscopic examination of t culture. When the swab is taken from a case acute inflammation of the throat or nasopharynx, a the clinical disease is suggestive of diphtheria, t presence of diphtheria bacilli in the cultures—i positive report—is sufficient evidence that the dise is diphtheria, and that the bacilli are virulent. carriers, however, or in persons not showing clini symptoms of diphtheria, fermentation and virule tests must be carried out to establish the full ident of the organism.

The report may be variously drafted:—

(1) "Diphtheria bacilli present."
(2) "Diphtheria bacilli positive."
(3) "Diphtheria bacilli+" (or ++, or +++).
(4) "Diphtheria bacilli positive (scanty)."
(5) "Bacilli morphologically indistinguishable from di theria bacilli are present. A virulence test is being do and the report will be forwarded in 5-8 days' time."

In any report the terms "K.L.B." and "dip theria bacilli" are synonymous. The repo (1), (2), and (3) explain themselves.

(4) This report indicates that only a very f diphtheria bacilli can be recognised even after cultu and must be interpreted solely in the light of t clinical condition. If the case is one of acute infla mation of the throat, but clinically *not* diphtheria report such as this would be almost equivalent a negative finding. The case should be watched a a further swab sent immediately. On the other han if the swab is from a convalescent, it indicates th the diphtheria bacilli have almost disappeared a that the case may soon be considered fit for dischar

(5) Where no indication is given to the bacteriolog as to the clinical condition and site of the disea where the material is from some other part of t body, such as the ear, eye, or in a wound; or wh the case is that of a suspected carrier or even chronic carrier, the mere presence of diphtheria-l

anisms does not mean that these bacilli are viru—i.e., capable of causing the disease—or even non-virulent diphtheria bacilli, since certain ntheroids may simulate microscopically the bs-Löffler bacillus. Under the conditions above ntioned it is impossible to determine viru:e purely from microscopical examination, and virulence test is absolutely necessary. As cated in the report quoted above, a virulence is frequently done without further notice by the oratory, and the conduct of the case will be deter.ed by the result of this test. On the other hand, must be remembered that some bacteriologists, ising that the diagnosis of the presence of virulent ntheria bacilli cannot be made solely from micro.ical examination, issue the positive report always he cautious manner of "bacilli morphologically istinguishable from diphtheria bacilli are present." virulence test is not suggested by the bacteriolo-, this form of report may be regarded as posi:.

o sum up, any acute condition of the throat vhich a positive report is received must be regarded diphtheria and treated as such until evidence is ained to the contrary. In doubtful cases it is isable to have the organisms isolated if possible a virulence test performed.

The Significance of Negative Reports.

negative result means that no diphtheria bacilli be recognised microscopically in the culture. en the swab has been taken from a person who not active or clinical diphtheria, such as a carrier, s important that the culture tube showing a nega: result should be incubated for a further 24 hours. would appear that in many of these cases the illi are in a state of "lag," and do not commence grow as quickly as organisms from acute cases. e percentage of positive results from carriers may as much as 50 per cent. higher when the cultures re-examined after a further 24 hours' incubation. f the case is one of acute inflammation, and from clinical appearance the presumption is that it *not* one of diphtheria, then a negative report of value and will confirm this opinion. If, on the er hand, the symptoms are those of diphtheria, n the diagnosis of diphtheria must still be main.ed, and specific treatment continued in spite of egative report. A further swab should be sub:ted to the laboratory.

f a convalescent diphtheria case is ready for dis.rge, one negative report does not mean that the ient is free from infection. Three consecutive ative reports are required, and the swabs should taken carefully, and not immediately after meals after local treatment such as antiseptic gargles. th carriers even three negative reports are not ficient to declare the case as free from infection. virulent diphtheria bacilli have been present consecutive negative reports at twice-weekly ervals will be necessary.

f the case, when first seen by the practitioner, is overing from an illness thought to be diphtheria, egative swab report must be considered in con.ction with a Schick test. Broadly speaking, a sitive Schick test and a negative swab indicates t the case is not diphtheria, while a negative ick test and a negative swab in a young person gests that the disease is likely to be diphtheria.

It must be remembered that in diphtheria a throat ab alone is not sufficient, particularly in con.lescents and suspected carriers, and a *nasal swab uld always be taken as well*, while in certain cases swab from the ear should also be secured. The ort on the nasal swab should be considered in the ne manner as that on the throat swab.

Remarks.

In considering laboratory reports the clinical ect of the case must be taken into consideration. e responsibility rests with the clinician, who must not rely implicitly on the bacteriological diagnosis; in any case where there is a reasonable suspicion of diphtheria it is his duty to administer antitoxin at once, and to continue to do so even in spite of a negative laboratory report. *The practice of withholding antitoxin until the report on the swab has been obtained cannot be too strongly condemned.*

The mortality of diphtheria increases with the delay in administering antitoxin, and the wait of 18 to 24 hours which must elapse before the bacteriological report can be given may in some cases determine the fatal issue. If antitoxin has been given, and the case turns out not to be diphtheria, no harm has been done, but if the patient is really suffering from the disease the prompt administration of antitoxin increases tremendously the chance of recovery. As an aid to the clinical diagnosis the laboratory report is invaluable, but it must never be considered a substitute.

The foregoing remarks apply particularly to the first few days of the acute stage of the disease. It must be remembered that diphtheria bacilli rapidly disappear from the throat during convalescence. At the end of the fourth week only one-third of the patients harbour bacilli, while only one-fifth show a positive swab by the end of the sixth week. These facts must be borne in mind when assessing the significance of a laboratory report. A report showing "scanty diphtheria bacilli" will have a different significance depending on whether the case is an acute tonsillar inflammatory condition not clinically diphtheria, or a convalescent patient almost ready for discharge.

Carriers.

Although in 80 per cent. of cases the diphtheria bacilli have disappeared by the sixth week, in some instances they may still persist for a long time, and if they are present after 12 weeks from the onset of the disease (8·73 per cent. of cases), the patient is arbitrarily termed a "carrier." It is essential that the virulence of diphtheria-like organisms in such cases should be tested, since only virulent organisms are capable of spreading the disease; if the bacilli are non-virulent the patient can be released from quarantine. When diphtheria-like organisms are found in the throats of those not suffering from the clinical disease, as in healthy contact cases, or suspected carriers, the morphological appearance alone is not diagnostic.

Virulence Test.

The diphtheria bacillus must first be isolated in pure culture by plating on special media, and fermentation tests are then carried out. Production of acid should occur in glucose but not in saccharose. A guinea-pig is then inoculated intracutaneously with a small amount of the culture. Usually a week must elapse before a report on the virulence test can be received. As far as is known, non-virulent diphtheria bacilli are not capable of giving rise to the clinical symptoms of diphtheria.

Other Organisms in Association with Diphtheria.—Some reports mention the other organisms that are found in the cultures, in addition to diphtheria bacilli, and reference is made sometimes to the presence of hæmolytic streptococci. In most cases of diphtheria hæmolytic streptococci are present, often in large numbers, and as long as there is nothing out of the ordinary in the clinical aspects of the case the mere presence of these organisms has no special significance. On the other hand, it must be recognised that severe adenitis may be caused by streptococci, and that they accentuate the severity of the throat lesions.

The presence of Hofmann's bacillus has no pathological significance. It is often found in large numbers in the throats of convalescent diphtheria patients, particularly when the Klebs-Löffler bacilli have disappeared. It is non-virulent to laboratory animals.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT CARDIFF.

(*Continued from p. 469.*)

SECTION OF MEDICINE.

Dr. A. FERGUS HEWAT (Edinburgh), Vice-President of the Section, took the chair at a discussion on the

PREVENTION AND TREATMENT OF DIPHTHERIA.

Dr. J. D. ROLLESTON (M.A.B.) considered prevention under two headings: (1) general measures, including isolation, disinfection, and treatment of the carrier; and (2) specific immunisation. Although it was doubtful whether isolation of diphtheria patients in special hospitals had had much effect in reducing its incidence, it was generally agreed that diphtheria required such treatment more than any other disease admitted to fever hospitals. There was a growing tendency among medical officers of health, medical superintendents of fever hospitals, and other sanitary authorities to discredit the value of terminal disinfection after diphtheria, and to regard the living carrier as responsible for the spread of the disease. The period of isolation of a patient should be determined by clinical considerations. In the absence of any discharges from the nose or ear or acute inflammatory condition of the throat, a patient who had had a mild attack might be set at liberty at the end of a month. In cases of any degree of severity the patient should be detained at least six weeks, as during that time some form of paralysis was most likely to develop. No uniformly successful method had yet been discovered for dealing with the carrier. The most efficacious measures were tonsillectomy and treatment of sinus infections, but they were not always practicable nor invariably successful. The practice of insisting on one or two negative faucial and nasal cultures before discharging a patient was merely illusory, as owing to the frequent occurrence of intermittency in the carrier state a false sense of security might arise from obtaining such cultures. As the return case rate was no higher in those hospitals which had abandoned the practice of swabbing patients before discharge than in those in which it was still observed, Dr. Rolleston had discontinued the practice at his own hospital since his appointment as medical superintendent two and a half years ago, without finding that this discontinuance had been followed by an increase in the return case rate. Specific immunisation against diphtheria was either passive, by injection of small doses of antitoxin, or active, by injection of toxin-antitoxin or similar preparations. The immunity conferred by passive immunisation, though immediate, was only of short duration, and the injection of antitoxin also predisposed the individual to an unusually severe reaction when a therapeutic dose was needed in the course of the next few years. Dr. Rolleston said that in hospitals and in families where the children could be kept under close observation after exposure to infection he did not think it necessary to carry out passive immunisation, though he was aware that in some clinics, especially on the continent, it was the practice to administer prophylactic doses of antitoxin with or without a preliminary Schick test, on the occurrence of a single case of diphtheria in a children's ward.

In carrying out active immunisation, which conferred a more durable and possibly permanent immunity, it had recently become the practice, especially in public health work in dealing with children under 6 years of age, to dispense with the preliminary Schick test, as the great majority of them were susceptible to diphtheria. In adults, on the other hand, who were more likely to react severely, a preliminary Schick test was necessary. In a large number of fever hospitals it was now the rule to carry out active immunisation of the nursing staff on joining. Since the introduction of active immunisation of newcomers the incidence of diphtheria amo the nurses at the Western Hospital (Metropolit Asylums Board), though it had never been very hig had shown a slight fall. Attacks of diphther occasionally did occur in nurses whose Schick reactio were negative either spontaneously or as the result immunisation. This was probably due to nurs being exposed to massive doses of virulent infectio whereas other negative Schick persons who we exposed to only slight and occasional infectio escaped. In addition to protecting nurses, acti immunisation was indicated in schools, creche orphanages, and other collections of children. Althou no fatal accidents following active immunisation ha occurred in this country, as they had in the Unite States, Austria, China, and Russia, the local reactio and constitutional disturbance were often sever Owing, therefore, to the occasional failure to protec and the possibility of severe reactions, Dr. Rollest had been unwilling to make active immunisatio against diphtheria compulsory, like vaccinatio against small-pox, especially as diphtheria antitox was an infallible remedy within the first 24 hou whereas in small-pox no treatment, however ear it was employed, invariably modified the course the disease.

Dr. Rolleston discussed the treatment of diphtheri in order of importance, under the headings of seru therapy, general measures, and local treatment. Lik most of his colleagues in the Metropolitan Asylum Board hospitals he was, he said, in favour of cor paratively large doses of antitoxin—viz., 4000–80 units for mild faucial or nasal cases, 12,000–16,0 units for moderate attacks, and 24,000 units, repeate if necessary, for severe attacks. He preferred intr muscular injection into the vastus externus to an other method, as it ensured a much more rap absorption of antitoxin than the subcutaneo method, and was much safer and pleasanter for th patient than intravenous injection, which was followe in a large proportion of cases by rigors or shoc While fully convinced of the importance of ear administration of antitoxin, having never seen death from diphtheria nor severe paralysis whe antitoxin had been given on the first day of th disease, he could not too strongly denounce th doctrine that antitoxin was of no value after the fift day of disease. As he had maintained many yea previously,[1] clinical rather than chronological co siderations should be the guide in the treatment diphtheria, the presence of membrane in the throa nose, or elsewhere being an indication for sero-therap The chief advance in recent times in the treatme of diphtheria had been the use of a refined or co centrated serum, whereby the incidence of rash and other unpleasant sequelæ had been reduced a minimum. The only manifestation of seru sickness now seen was urticaria, the frequency which, however, had been reduced from 60 to per cent. of the cases injected. The most importa principle in the general treatment of diphtheria w the enforcement of rest for a period proportiona to the severity of the initial angina. It was doubtf if any drug had power to modify favourably th course of the disease, though adrenalin appeared be of value in forestalling or combating the supraren insufficiency which played an important part in th syndrome known as cardiac paralysis. Alcoh which for long had been regarded as indispensab in diphtheria, so far from being of any value in th disease, was liable to increase the myocardial degener tion initiated by the diphtherial poison. In 192 when no alcohol at all was used in the treatment diphtheria at the Western Hospital, the case mortali (3·01 per cent.) was lower than in any of the oth M.A.B. hospitals.[2] Since the introduction of antitox local applications to the throat had occupied a ve secondary position in treatment. In a series 3000 cases Dr. Rolleston had employed local trea ment in only 364 (12·13 per cent.). Most of the

[1] THE LANCET, 1907, i., 1112.
[2] See THE LANCET, 1928, i., 820.

ients were older children or adults, who welcomed form of local treatment which younger children a rule resisted. From comparative observations ıad been found that the average period for the ɔat to become clean after injection of antitoxin practically the same whether local treatment been employed or not.

Discussion.

)r. GRAHAM FORBES (London) gave a summary diphtheria preventive work in Great Britain up ſune, 1928: (*a*) of 44,131 persons tested in council ɔols and welfare centres, 72 per cent. had proved itive and 40,512 had been immunised; (*b*) of 329 persons tested in residential schools, 13,625 proved positive and 9155 had been immunised; of 10,511 members of hospital staffs, 3598 (34 per t.) had been found positive and 4184 had been ıunised. In this total of 91,036 persons of all s, of whom 53,841 had been immunised, no known ous harmful effect—still less a fatality—had ılted, though a total of at least 300,000 injections been given.

)r. E. W. GOODALL (late M.A.B.) marvelled that r so many years there should still be a diver- ce of opinion on such important questions as method of administration and the dosage of itoxin. There could be no question that the ım was brought into immediate contact with the in in the blood by intravenous injection, yet when remedy was first introduced most remarkable ılts were obtained by the subcutaneous method. dosage of the early days would be considered gnificant by most modern clinicians. As the result rial of intravenous injections, and large doses up 200,000 units, he had come to the conclusion, r a very large experience, that intravenous injec- ı should be reserved for the more severe cases, amuscular for the moderately severe, and sub- ıneous for the benign. He considered that about)00 units was the limit of dosage beyond which it unnecessary to go. As regards serum treatment, ry case should be treated on its clinical merits, spective of the duration of the illness. It was folly vait for the result of a bacteriological examination)re administering serum. Prolonged rest in the ımbent position was essential if the patient was)e secured from the risk of heart failure during valescence. He had long been of the opinion that liac stimulants were useless in the acute stage.

)r. JOHN MCGARRITY (Cardiff) said that with late Dr. Claude Ker he had carried out the Schick in over 3000 individuals of all ages, including ients, nurses, and medical students during the er part of 1922, and during 1923 and 1924 in the ' Hospital of Edinburgh. At Dr. Ker's suggestion had immunised with toxin-antitoxin over 300 ick-positive children in that institution, practically ınder 10 years of age. This group showed so little ıl or constitutional reaction that Dr. Ker advised public health authorities of Edinburgh that ilar measures could safely be employed among the ɔol-children of that city. The work had been un in 1923, and over 6000 children had now been ıunised without any ill-effects. In those days in-antitoxin was used, and while few, if any, of children under 10 years of age were upset in the t by the inoculations, many of the nursing staff, of whom were immunised, suffered severely, h locally and constitutionally, especially those) showed pseudo-reactions when Schick tested. ce the use of toxoid-antitoxin had become general, ras unusual to encounter any reactions at all, even ɔng adults. During the last three years none the nurses in the Cardiff Isolation Hospital had ıplained of anything worse than a sore arm and ht headache. In the Cardiff schools some hundreds children had been tested and immunised since the k began in 1926 without any ill-effects. In diff no child who had given a negative Schick ction when tested in the schools had up to date eloped diphtheria; nor during the last three years had any of the nurses or maids at the Isolation Hospital with a negative reaction contracted the disease. The treatment of diphtheria depended very largely on the early clinical diagnosis and the early administration of a suitable dose of diphtheria antitoxin, although the after-care was very important. Dr. McGarrity's practice was to give an intramuscular injection in doses of from 3000–4000 units for mild cases, 6000–8000 units for moderate cases, and from 10,000–20,000 units for severe cases. He seldom found it necessary to give more than 60,000 units of antitoxin to the most severe cases, but he invariably gave the first dose in severe cases intravenously and the rest intramuscularly. He had found caffeine-sodio-salicylate or camphor the best drugs to use in threatening heart failure, given hypodermically in from gr. ½ to grs. 1 or 2, every two or four hours. He was also in favour of alcohol in small doses. In the treatment of laryngeal diphtheria he preferred intubation to tracheotomy, but did not recommend it for use in general practice. He recommended spoon-feeding rather than feeding by nasal tube in either case.

Dr. CYRIL LEWIS (Cardiff) presided when Prof. T. GILLMAN MOORHEAD (Dublin) opened a discussion on

ACUTE NEPHRITIS.

A study of the reports of the Irish Free State for the last five years showed, he said, that one death in every 231 registered to be due to acute nephritis. In England and Wales over the same period, one death in every 334 was found to be caused by acute nephritis. Owing to the comparative infrequency of the disease, the study of groups of cases was not possible until the Great War period. Prof. Moorhead desired to emphasise at the outset three points in prophylaxis—the common-sense removal of all septic foci, with especial attention to the throat and nasal sinuses; Osman's alkali treatment, which he received with hope but with caution, for Peters had found no significant difference in the onset of complications in those treated with and without alkalis respectively in a series of 8000 cases analysed for the period 1910–22. The third point—the value of scarlatinal antitoxin was still sub judice—but reports up to date were "fairly satisfactory."

The repeated attempts at classification had resulted in a lack of recognising the unity which underlies the varying pathological manifestations of the acute condition. The term nephrosis was not necessary, as he regarded it merely as a variety of acute nephritis identical with the condition called toxæmic kidney by English writers. Rather than have a classification it was wiser to have in mind "the kidney composed of four elements—glomerular, tubular, interstitial, and vascular—and that each element may be involved in a varying degree according to the cause of the inflammation, its severity and its duration, and provided we remember that the functional changes are likely to vary also with the degree of involvement of each of these structures and the severity of that involvement, we will do better as clinicians to recognise one form of acute nephritis only." That staphylococcal toxins are more likely to produce parenchymatous lesions and resultant œdema, and streptococcal toxins glomerular lesions, is not a view that has been convincingly proved, and hæmorrhagic and œdematous cases are by no means invariably clear cut. The value of blood-pressure estimations was stressed, for a rise occurs in all primary acute attacks, and a fall accompanied by a diminution in size of the heart are favourable signs. The only cases that are open to any doubt in diagnosis are cases of anuria with palpable swelling of one or both kidneys and delayed appearance of œdema.

The character of the protein in the urine desires further and closer study; attention was drawn to the work of Kellaway, Davies, and Williams, who suggest that much of the protein present consists of kidney substance in cases of severely damaged kidneys. The estimation of the quantity of protein passed per diem is of value in acute nephritis, but the Esbach's albumino-

meter is quite unreliable—the readings of which vary widely with the temperature. Dr. Moorhead thought that the progress of the case and the immediate prognosis may be better determined by blood-urea estimation than by any other laboratory examination. Discussing the question of chlorides and their absence from the urine, he regarded it the result of a locking-up of chlorides in the body due to tissue demand rather than to renal failure. A slight acidosis, due to diminution of the sod. carbonate content of the blood, is also present—an observation which had been foreshadowed long ago by clinicians who knew that it was more difficult to make the urine alkaline in acute nephritis than in health.

An increase of phosphates in the blood is associated with the development of toxic symptoms, and the return of the phosphates to a normal level is of favourable significance. This is the basis of von Noorden's special recommendation, that large quantities of calcium be given to all cases of nephritis taking milk as their stable diet, for the phosphoric acid content of milk is high.

Changes also occur in the cerebro-spinal fluid in acute nephritis—it is under increased pressure—an increase of urea and an increased protein content. Writers have also remarked on the high chloride content of the cerebro-spinal fluid in nephritis, and that a high chloride value is invariably found in uræmia. Regarding *prognosis*, by far the largest number of cases pursue a favourable course. In the experience of Dr. Moorhead, those cases which present the greatest increase of blood pressure recover most rapidly. He refers to the observation of de Wesselow, that 70 per cent. of the war nephritis have recovered completely, and also the work of Hume and Nattrass, who showed a recovery in 77 per cent. in war cases, but only 45 per cent. recovery in acute cases in the period 1922–25. In judging these cases following an acute attack, functional tests are most valuable, but he cannot agree with some writers who have stated that provided these tests are normal, a persistent albuminuria can be discarded, for, in his opinion and experience, they remain poor in health and are liable to intercurrent infections.

Speaking on treatment, Dr. Moorhead thought that the rigid rests in bed treatment had been overdone; provided there is no hæmaturia, cases with albumin in the urine and œdema often improved when they are allowed to get up. For the few days of the acute condition, when there is frequently anorexia, small quantities of milk and water, to which a little calcium carbonate has been added, satisfies. Later, carbohydrates can be increased, followed by a gradual increase in the protein intake; but restriction in protein intake is recommended for some time, even when there is almost complete recovery. No drug treatment is required apart from the giving of mild diaphoretics and purgatives. The kidney should not be stimulated. Ammonium chloride, so warmly recommended by the Mayo Clinic, has not proved successful, and novasurol should most certainly be used with great caution in renal œdema. "When coma develops, either subsequent to or independent of epileptiform convulsions, and when all ordinary measures, such as hot packs, the use of pilocarpine in small doses, and purging, fail to produce rapid improvement, venesection should be performed." Dr. Moorhead also advocated lumbar puncture in acute nephritis, complicated with nervous phenomena; he has always found it to be beneficial and that it has never resulted in any harmful effects. He has not obtained any satisfaction in the use of Fischer's solution, and the injection of plain sodium chloride and of sodium citrate solutions can be justified only as diluents of retained toxins. Morphia—the sheet-anchor for the allied condition, eclampsia—should be used in the treatment of convulsions; although having been under suspicion for long it is both safe and satisfactory.

Dr. H. LETHEBY TIDY (London) dealt with

Acute Hœmorrhagic Nephritis

the form of nephritis of which the outstanding and frequently the only characteristic of which is renal hæmorrhage. It is the condition described by Hu White in 1911 as essential renal hæmaturia. hospital records show that it is a common disease in fact, that it is commoner than "acute parenc matous nephritis." Cases may attend in an o patient department once or twice and then, owing the absence of any symptoms, disappear permanen It is most common in children and young adults, a a throat infection is present in 75 per cent. of the ca There is either a frank tonsillitis or a marked adeni Predisposing infections are not so commonly found adults, and that is why such cases are investiga surgically. Renal hæmorrhage is frequently sudd and a large amount of blood may be passed in urine. Bacteriological examinations are nearly alw negative—but sometimes the same organism is isola from the urine and from the pus from an abscess the neck. The classical symptoms of acute nephritis absent. Œdema is usually entirely absent; wh present, it is only a slight puffiness of the eyelids more often a pallor of the face with a puffiness of forehead. The hæmaturia disappears rapidly in majority of cases—in some, especially in children, whom it has remained for three to four weeks quickly disappears after tonsillectomy. The la majority of the cases recover completely, but small number, about 5 per cent., remain with defin evidence of renal deficiency after the lapse of sc years. These are the cases in whom the initial att caused anxiety by general signs of ill-health, persiste of albumin and hæmaturia, and defective urea, c centration tests. This small group advances chronic interstitial nephritis, eventually dying uræmia. The pathogenesis of acute hæmorrha nephritis is uncertain, but, in general, the gr appears to be intermediate between a nephritis an hæmorrhagic state. The condition may be define an acute glomerulitis (Fahr described it as a "diff capillaritis of the glomerular loops"). Similar char are seen in the kidneys in subacute bacterial en carditis. But, unlike this condition, bacteria are found in the affected glomeruli, and the urine practically always sterile in hæmorrhagic nephr Again, the hæmorrhage is usually only microscopi subacute endocarditis. It may be definitely stated t acute hæmorrhagic nephritis is not due to bacte emboli. The diagnosis is easy in children, but in ad the surgical causes of hæmaturia have to be exclu before such a diagnosis is made.

Discussion.

Dr. HUGH GAINSBOROUGH (London) emphasised importance of focal infection in acute nephritis, is in agreement with Gray's explanation of the spe sensitivity of the kidney to circulating organisms toxins being caused by the concentration of the bl in the glomeruli and of the toxins in the tubu Histological evidence of glomerular damage is coarse a test, and the glomeruli may be injured in sense of altered permeability, and yet appear nor when viewed by the microscope. This plus evidence of experimental nephritis speaks aga the arbitrary division of nephritis into glomeru glomerulo-tubular, or pure tubular forms. We can yet explain why an acute nephritis becomes chroni whether it is because of the severity of the orig injury, or because of the continuance of the t factors, or as a result of metabolic changes brou about, for example, by the continued albuminu The metabolic disturbances in acute nephritis more easily studied in subacute forms, where disturbances are less transitory though similar nature. The hypercholesterolæmia is as yet un plained—the albuminuria may be important in relationship.

Dr. A. E. GOW (London) emphasised the vary incidence of nephritis in scarlet fever at vari periods. He regarded the classification of the differ forms of nephritis to be important, and stressed essential differences between the focal and the diff type of nephritis. He also called attention to possible presence of syphilis as the possible un

g factor in cases of resistant œdema. The mistry of the urine should not be neglected—h knowledge can be gained by the simple urinary ervation on the progress of nephritis cases by ated examinations.

r. R. L. MACKENZIE WALLIS (London) dwelt on means of distinguishing a toxic and an inflam-ory condition of the kidneys. He has found that oxic kidneys the main diagnostic features are a blood-urea, a raised diastase content of the e, and the presence of a relative excess of ulin in the urine. Dr. Wallis finds that the inistration of HCl orally is very helpful in icing the blood-urea in cases of acute nephritis.

r. A. F. S. SLADDEN (Swansea) wished to stress all laboratory tests in all pathological states e only auxiliary and secondary to clinical observa-. He had found the estimation of ammonia in urine to be valuable in estimating the progress—t was diminished in acute nephritis, and when litions improved the excretion of NH_3 increased.

r. J. WILKIE SCOTT (Nottingham) remarked that of blood pressure seemed now to be generally rded as an important factor in the attacks of vulsions and unconsciousness. He had found t benefit from venesection both in uræmic cks and in eclampsia when the pressure was h. In acute suppression of urine of more than hours' duration the advisability of capsulotomy uld be considered.

SECTION OF SURGERY.

PANCREATITIS.

[r. J. W. GEARY GRANT (Cardiff) opened the ussion. The term "pancreatitis" had been berately chosen in order to include the many leties of this rather rare disease. His own remarks e based on personal experience of six cases seen he last two years. He proposed to limit himself acute necrosis of the pancreas. This term was ferred because it did not beg the question of a nary inflammatory origin and did not postulate norrhage as a necessary part of the picture. The creas possessed two ducts which varied in their tive size and might, or might not, anastomose. main duct of Wirsung joined the bile-duct ut 4 mm. from the duodenal opening, the distance ying from zero to 11 mm. The text-books cribed four types, shown by Brocq to be four ges, of acute pancreatitis: œdematous, hæmor-gic, gangrenous, and suppurative. Some of the purative cases were probably examples of primary ction, others were secondary infections following necrosis of the gland. In studying papers and e reports on acute pancreatitis striking differences e found in types of disease and mortality in different ics and also wide divergence of views on ætiology treatment. Pancreatic necrosis depended on the ing free of the secretion and its activation in the ts of the gland. For this it was necessary that pancreas should be in the phase of secretion and t the proferments should be activated by some nt. The importance of the first condition was wn by Brocq's experiments, in which bile, injected the duct of Wirsung, failed to produce pancreatitis ess the dog had previously had a full meal. ically sudden onset of the disease often followed eavy meal. Activation of the proferments could brought about by normal bile or, better, bile rived of its mucus or concentrated, by succus ericus if it gained access to the gland through a ent duct of Santorini, and probably by products cytolysis of gland cells and leucocytes, calcium s, and bacteria. It was therefore probable that te necrosis could occur in more than one way. present three main theories were held concerning 1. Vascular, due to embolism or thrombosis of creatic vessels. Experimental evidence gave no port to this view. 2. Infective. This theory, ngly supported by Deaver and Maugeret, and lately Graham and others, held that infection spread by way of the lymphatics from the gall-bladder to the head of the pancreas. Against this theory it might be said that in the vast majority of instances the hæmorrhagic fluid in the general abdominal cavity and in the lesser sac was sterile. Experimental infection of liver and gall-bladder with staphylococci did not produce pancreatic necrosis. Infections of the gall-bladder were common; if they were the cause acute necrosis should be more frequent than it was. Gastric and duodenal ulcers were not followed by pancreatitis, although infection might be conveyed to the pancreas in these conditions. 3. Theory that necrosis caused by regurgitation of bile up the pancreatic ducts. Brocq and Binet found that when the duct of Wirsung in the dog was divided and left open in the peritoneal cavity, fat necrosis did not ensue, but if the secretion was allowed to mix with bile hæmorrhage and steato-necrosis followed. The activating agent in the bile was the glycocholate of soda. The probable mechanism by which bile regurgitated into the pancreatic duct was the impaction of a small calculus in the bile papilla and several such cases had been reported. For the bile to reach the pancreas the stone must block the papilla without blocking the duct of Wirsung. This could only occur in a certain number of people where the length of the ampulla was at least twice the diameter of its opening into the duodenum, but as acute pancreatitis was comparatively a rare disease the theory would not be invalidated on that account. Spasm of the sphincter of Oddie might cause regurgitation of bile if it embraced the common duct distal to the junction of the duct of Wirsung. Another way in which secretion in pancreatic ducts could be activated was by the forcing of duodenal contents with succus entericus into the valveless duct of Santorini during violent vomiting. A rare cause of pancreatitis was the entry of an ascaris into the duct of Wirsung. A few cases had followed various abdominal operations and were due to injury to the pancreas or ducts.

Diagnosis might be very difficult especially in the "formes frustes" of the disease. The speaker felt that the teaching that acute conditions of the gall-bladder should be allowed to settle down before operation was entirely wrong, for pancreatic disease was often present. If there was any suspicion of the pancreas being involved it should be inspected at operation. With regard to treatment abdominal drainage in the region of the pancreas, incision of the gland, gauze tamponage and drainage, or either treatment with drainage of the biliary tract had all given good results. Under no conditions should the gall-bladder be removed. The administration of aspirin and hexamine might do good.

Mr. DIGBY CHAMBERLAIN (Leeds) confined his remarks to acute pancreatitis. At Leeds they had had experience of 21 cases in the last ten years. The condition was probably not as uncommon as was thought for many cases settled down without operation. They all knew of cases of gall-bladder disease which had settled down, and later when they were operated on a swollen pancreas was found with fat necrosis. He was unable to differentiate between the cases which should be operated on and those which should not. In all of his cases except one he had found an infected gall-bladder with stones. Bile taken at operation in four cases had contained a hæmolytic streptococcus. The cyanosis, which was so often present, was not the result of septicæmia as had been suggested because no methæmoglobin was found in the blood. It was due to impaired action of the diaphragm and was found in other conditions besides pancreatitis. The diastatic index in the urine was important in diagnosis. For treatment he advised immediate operation with drainage of the gall-bladder as well as of the pancreas. The ideal was to drain posteriorly, resecting the eleventh rib in the mid-axillary line, but generally the patient could not stand the extra ten minutes involved in this procedure. He protected the abdominal wall from the action of gastric juice by painting with rubber

dissolved in ether. The speaker believed in the infective theory of pancreatitis, the infection travelling from the gall-bladder via the lymphatic glands of the hilum. The pancreatic duct was guarded by a very efficient valve. The wall between it and the bile-duct became thinned out into a flap which acted as a valve so that regurgitation of bile could not take place. In gastric ulcer the pancreas was protected by fibrous tissue forming on the floor of the ulcer.

Dr. MACKENZIE WALLIS (London) said he had been interested for a number of years in the diagnosis of pancreatitis. In 1920 he had published the results of a long series of investigations on tests for pancreatic function and his conclusions had since been confirmed by others. No individual test was pathognomonic but three—namely, the diastase content of the urine, Loewy's test, and glycosuria if taken together gave a reliable index of pancreatic disease. These tests could be rapidly performed. If time permitted the findings might be confirmed by the finding of excess of undigested fat and muscle-fibres in the stools. The fleeting character of the tests must be borne in mind. They might be positive one day and negative the next. The results were often discarded because this was not recognised. Glycosuria fluctuated exceedingly, but the same was true of the diastase test. The speaker gave examples. In one case the diastase content fell from 200 units to 10, then rose again to 220, and finally remained constant at 10. He regarded these rises as due to recurrent attacks of subacute pancreatitis. The Loewy test was of no value by itself, but useful in conjunction with the others. In chronic pancreatitis the tests were of value, but here complete chemical examination of the stools was indicated. Catarrhal pancreatitis was common in association with jaundice. It also occurred after removal of the gall-bladder; hepatic bile was irritating because it contained no mucus, bile from the gall-bladder was non-irritating. If hepatic bile regurgitated into the pancreatic duct catarrhal pancreatitis followed. Diarrhœa and nausea after removal of the gall-bladder were due to this. Duodenal intubation gave important information especially in chronic interstitial pancreatitis. Cyanosis was due to acidosis set up by fat necrosis. The treatment was to place gauze soaked in horse serum in contact with the tissues. Horse serum had great capacity for absorbing pancreatic ferment.

The President, Prof. A. W. SHEEN (Cardiff) described pancreatitis following parturition and asked whether members had seen similar cases. He commented on the rapid pulse of pancreatitis.

Mr. F. C. PYBUS (Newcastle-on-Tyne) spoke on diagnosis and laid special stress on subscapular pain as a symptom in pancreatitis. Pain under the left subscapular was diagnostic unless ulcer on the lesser curvature of the stomach was present. Rapid pulse and cyanosis were also important. The pancreas should be remembered when dealing with any lesion in the upper abdomen and in anomalous cases of gall-stones, especially if the symptoms were worse than the diagnosis suggested.

Prof. A. H. BURGESS (Manchester) had had 21 cases in the last four years. The mortality was 20 per cent. Contrary to text-book teaching, males preponderated and the mortality amongst them had been much greater—44 per cent. compared to 16 per cent. in females. The disease was commoner than was generally supposed. A swollen pancreas and fat necrosis were often found in operations for gall-stones. There was usually a history of previous attacks and this was true of cases in which no gall-stones had been found.

Prof. A. FULLERTON (Belfast) said that all grades of pancreatitis existed between fulminating and mild cases. In his cases the outstanding feature had been the severity of the pain. Cyanosis was not marked. Even after sloughing of a large piece of the pancreas patients might do well.

Mr. R. ST. L. BROCKMAN (Sheffield) gave an acco of a remarkable case of cyanosis in acute pancreati He saw the man one and a half hours after the on of abdominal symptoms. The patient was the col of a boiled lobster and the colour had come on si the pain. Soon after the red colour changed typical cyanosis. The speaker refrained from touch the pancreas at operation. He drained the g bladder and, if necessary, put a tube in the pelvis

Mr. A. W. ADAMS (Bristol) described cases pancreatitis following pregnancy.

Mr. GRANT replied. He did not agree with Chamberlain's conclusions, for in many cases b gall-bladder wall and bile were sterile. If the c dition was due to hæmolytic streptococci the logi thing would be to remove the gall-bladder, but if t were done the patients died.

DIAGNOSIS OF URETERIC CALCULI.

The discussion was opened by Prof. FULLERT He said that contrary to text-book teaching main constituent of his calculi was calcium oxal The symptoms of hæmorrhage and pain were ea accounted for. It was rare for a ureter to be c pletely blocked by a calculus but reflex anuria mi occur. A remarkable phenomenon was reflex polyu on the affected side. This sign was extrem important in diagnosis. It might be the only s incriminating the kidney and the speaker descri cases to illustrate this. Out of 20 undoubted case ureteric calculi with no renal stones diuresis, w diminished specific gravity of the specimen taken ureteric catheter, was present on the affected side 70 per cent. The explanation of both anuria diuresis was afforded by a study of the vasoconstric and vasodilator nerves to the kidney. The stimu of a calculus might cause vasoconstriction and red tion of secretion of urine on that side, or vasodilatat with increased blood flow and diuresis.

Pain was often due to distention of the renal pel and the pain due to passage or arrest of a uret calculus could not be distinguished from that due a renal calculus lodged in the pelvis of the kidn A precisely similar calculus might give rise merely discomfort in one patient while in another there mi be the severest pain. The site of pain was extrem variable. In one patient it was in the knee, in anot it radiated from the lumbar region to the shoul and head. Pain in the iliac fossa was common surgeons should be careful not to mistake uret calculus for chronic appendicitis. Frequency of mic rition was not necessarily present. Hæmaturia mi be the first symptom and in rare cases the only sympt of calculus, but might for a time be absent. In tak a specimen for examination it was important not use a catheter, for any instrument might draw mi scopical blood. In the clinical examination of patient great care must be taken to exclude ot abdominal conditions. A stone in the lower enc the urethra could frequently be felt through rectal or vaginal wall. The speaker then discus X ray diagnosis, and finally described the cystosc appearances. Changes at the ureteric orifice w present in 20 out of 50 cases and sometimes calculus itself could be seen.

Dr. E. B. C. MAYRS (Belfast) gave the results analyses of urine obtained by catheterisation of ureters in 50 cases. Such an analysis seldom fa to distinguish between the normal and the affec kidney. Urines collected from the two kidneys w not always identical in volume and composition, in normal kidneys the differences were small were due to irritation from the catheters. Unilat diuresis of reflex origin could be produced with injury to the kidney. The most important prob was to distinguish reflex diuresis from loss of c centrating power due to insufficiency of kid epithelium. In diuresis the urine became more blood plasma for the kidney had less time to prod alterations in the glomerular filtrate. But

centration of various substances was not equally ered; chlorides were least affected and urea was affected than phosphate or creatinine. In the of concentration due to renal failure there was inished chloride excretion, the concentration of oride falling below that in blood plasma. Defective retion of urea was not always recognised unless cial tests were used, but it was easy to do this.

Dr. HUGH H. YOUNG (Baltimore) spoke of the vices rendered by Colonel Fullerton to members he American Medical Corps during the war. He ed that much that was in text-books concerning logy should be rewritten. The discovery of reflex resis by Prof. Fullerton was very important. Mayrs's work was new and of great interest. He orsed the remarks which had been made on the ject of pain. He himself had seen a number of es in which pain was absent. In one of these, seen n Sir Wm. Osler, a calculus the size and shape of a r was found in the ureter.

Dr. KENNETH WALKER (London) emphasised the ue of the wax-tipped bougie in cases where X rays not reveal the calculus.

Dr. SWIFT JOLY (London) spoke of cases of silent ie in which the only symptom was pyuria. aptomless pyuria was due to stone. X rays rded the best means of diagnosis at the present e.

Dr. J. B. MACALPINE (Manchester) showed two ern slides of a stone which, although not visible irst with X rays, was located with a catheterisation logram.

TION OF OBSTETRICS AND GYNÆCOLOGY.

HE DIAGNOSIS AND TREATMENT OF STERILITY.

Dr. ARTHUR E. GILES (London) opened the discus- from the point of view of the general practitioner. correct diagnosis, he said, depended upon a rough and systematic investigation of the anato- al and physiological features affecting the transit spermatozoa from the vagina to the Fallopian e, the fertilisation of the ovum, and the transit he fertilised ovum from ovary to uterus. Sexual urity was indicated by general appearance and development of the breasts and pubic hair. The ina and uterus must be normal, and the tubes ovaries not obviously abnormal, and there must a history of regular and normal menstruation. If us were accompanied by normal desire and sensation ight be assumed that the ovaries were sufficiently eloped and the endocrine function normal. Inter- rse might have been impossible through want of lity in the man, but there were several possible sons why it might be too painful for the woman. se included actual obstruction due to absence the vagina or imperforate hymen; anatomical osis or functional spasm of the vagina (vaginismus); s, abrasions, or vulvo-vaginitis. In tubo-ovarian ammation or ovarian prolapse pain might be the lt of deep pressure. The os externum, to receive spermatozoa, must be duly patent. Complete lusion was rare, but wide dilatation was not ntial. Nevertheless conception often took place n when no opening was apparent, and a good orism was: "Do not say that a woman cannot ome pregnant until you have youself removed her rus and ovaries, and even then it is wiser to say s improbable." Marked retroversion and acute eflexion turned the cervix unduly forward, and ing intercourse the external os was virtually shut from contact with the semen by being pressed inst the anterior vaginal wall. Dilatation and ification of the position of the cervix was often ckly followed by conception. The vaginal discharge ht be strongly acid, and if not adequately neutra- d by the cervical secretion might enfeeble or kill spermatozoa. The only certain way of determin- whether live spermatozoa were entering the cervical al was microscopical examination of its contents hours after intercourse.

The healthiness of the uterus was indicated by the clarity of the drop of mucus from the external os; a muco-purulent appearance suggested endometritis, which if serious might destroy sperm-cells. Even a mild salpingitis might seal up the tubal opening into the uterus; this could be detected by insufflation. There were no means of telling whether healthy ova were maturing and being received into the tubes, nor adequate knowledge of the conditions governing ectopic pregnancy and failure of an ovum to develop after the stage of nidation. Endometritis might allow impregnation, but forbid healthy placentation.

Treatment.

It was important to recognise the conditions in which sterility was incurable, so that the husband and wife might accept the fact and avoid constant alternation of hope and disappointment. Undersized uterus was not necessarily a bar; its growth was delayed rather than arrested, and the stimulus of marriage might be the best treatment. Thyroid might be given by the mouth, but ovarian substance must be injected, as it was destroyed in the stomach. Pronounced obesity should be reduced by diminishing intake. A rigid hymen should be excised; dilatation under an anæsthetic might remedy vaginal stenosis or vaginismus, and causes of pain should be abolished. If the husband had healthy spermatozoa, but could not introduce them, artificial insemination might be attempted. In dilating an unduly contracted os incisions should be avoided. "Nil nocere" was a good maxim. The remedy for marked anteflexion of the cervix was moderate dilatation with concomitant straightening of the uterus; the patient went to bed for 10 or 12 days with a glass intra-uterine stem pessary in place. Retroversion or retroflexion should be corrected so that the cervix was in a normal position during intercourse. If displacement returned, a Hodge pessary was a possible temporary measure, but it should not be worn for long, and operation was advised for persistent displacement. Noxious discharge was due to adenomatous disease of the vaginal aspect of the cervix or to endometritis, especially of the cervical type; the former should be treated by suitable applications, the latter by curetting, which should be performed thoroughly but gently. In swabbing the uterus afterwards strong reagents should be avoided. Tubal obstruction called for surgery. Endocrine inadequacy might now be detected by the chemical pathologist.

Dr. SIDNEY FORSDIKE reported that the semen had been defective in 46 out of 164 men whose wives had complained of sterility.

Insufflation.

Exploration of the uterus by dilatation of the cervical canal should only be undertaken if the tubes were known to be normal. It gave no information in the absence of symptoms and signs, but sometimes succeeded as a therapeutic measure. Inflation of the uterus and tubes, as introduced by Rubin in 1919, had become a diagnostic measure of the first importance, but was counterindicated by any signs of infection in the pelvis. Anæsthesia was only necessary when instruments could not be passed through the os. He used a pressure of up to 300 mm. on conscious patients if they did not complain, for if no air passed at that pressure the tubes were definitely closed. The same pressure was admissible under anæsthetic with the abdomen open so that it was possible to see what was happening, but he did not apply more than 200 mm. when the safeguard of tension pain was absent. Tubes might be temporarily blocked by kinking. It was all-important to decide upon the site of obstruction before undertaking any operation, for plastic operations upon the narrow part of the tube were not justified, but cases of closure of the fimbriated end offered some prospect of success. The most favourable were those in which the fimbriæ could be saved. The ovary should be freed and loosely fixed in the mouth of the new ostium.

Another valuable method was X ray examination with lipiodol, which was injected until the patient complained of tension pain.

Small ovarian cysts might prevent ova from ripening by pressure and distortion, and a limited peritonitis might veil off the ovary from the peritoneal cavity. Persistent corpus luteum, which was known to prevent œstrus and pregnancy in cattle, might have the same effect in women. "Incompatibility," or "selective sterility," was the name of the condition in which a presumably normal couple failed to procreate; most cases would not bear critical examination. Dr. Forsdike believed that they were really "combined relative sterility," both partners having low fertilising power.

Sterility in the Male.

Mr. KENNETH WALKER'S paper dealt with sterility in the husband, which various observers had found in differing degree in more than half the childless marriages they had investigated. Of 57 husbands referred to him by gynæcologists, he had found 25 normal, 18 with azoöspermia, and 14 with impaired fertility. Oligospermia might be due to the condom or to recent coitus; oligozoöspermia should only be diagnosed if indicated by every specimen examined, and oligonecrozoöspermia usually meant an inflammatory focus in the genital tract, probably in the vesicles. Venereal disease was responsible for most male sterility, but a comparatively mild infection of the tubules by other organisms might impair the spermatogenic function of the testicle, which was much more delicate than the internal secretion. Kyrle, who had studied a thousand testicles, stated that a normal testicle was hardly ever seen in a man dead of acute infective disease. Alcohol and similar poisons, endocrine disturbances, heat, diet, and local conditions might be responsible.

Artificial insemination was successful in veterinary but disappointing in medical practice, and the reason was probably that in the former it was always performed after natural coitus. The secretions from the genital passages were probably essential to fertility.

Removal of obstruction or of infections, the improvement of the general health and the administration of gland substance, preferably anterior lobe pituitary extract, were the chief remedial measures. Little or nothing was known of the physiology of reproduction or the function of the secondary glands of sex, and only by combined research could the knowledge be obtained which was indispensable to the scientific treatment of sterility.

Discussion.

Prof. H. BECKWITH WHITEHOUSE (Birmingham) stated that pregnancy had occurred in two cases in which he had excised the isthmic end of the tube and inserted the stump into the uterine cavity. Lipiodol prevented the adhesions so common in salpingotomy. He did not think the stress that Mr. Forsdike had laid on saving the fimbriæ was justifiable; as long as the lamina were intact pregnancy was possible. A promising method of artificial insemination was to paint the endometrium with the secretion of the cervical canal just after intercourse.

Prof. R. VAUDESCAL (Paris) warmly commended lipiodol as safe for the general practitioner. Pregnancy could sometimes be obtained when the tube was destroyed by grafting the ovary into the wall of the womb.

Dr. MARGARET BASDEN (London) remarked on the frequency of blocked tubes. She always used an anæsthetic for insufflation to eliminate tubal spasm. Corpus luteum had corrected amenorrhœa and sterility in obese patients when given in 5-gr. doses three times a day.

Dr. R. C. BUIST (Dundee) summed up the treatment of the idle and sterile in the advice, "Live on a shilling a day and earn it." Much vaginismus could be avoided by antemarital education; a wife who was hurt in her first coitus might pass the rest of her life in terror of it and remain childless.

Mr. E. FARQUHAR MURRAY (Newcastle-upon-Tyn said that he had been struck by the frequency nearly 50 per cent.—of mild vaginal and uteri infections. Tubes sometimes appeared blocked one test and open on another taken six months lat Of six patients he had opened for blocked tube, fi had shown definite signs of miliary tubercle, and would never hesitate to perform an investigato operation on a patient with a blocked tube and tuberculous history.

Dr. F. EDGE (Birmingham) recounted the meth employed by the late Prof. Taylor, who had penetrat the ovary with a cautery, split it, and stitched it again, to provide a normal exit for the ovum. was advisable in all operations for sterility to tell t house surgeon and nurses what was being done, avoid trouble from the patient later on.

Dr. MORTKANE (New Zealand) held that one test f blocked tube was not sufficient.

Dr. GRAY WARD (New York) spoke of the go results of X ray stimulation of the ovarian functi recently obtained by Dr. Rubin. The method w widely used in America. Not more than thr treatments were given, at intervals of a week or fortnight.

The CHAIRMAN hailed insufflation as the mo important gynæcological discovery of recent yea Its inventor had enjoined repetition when a negati result was obtained. As an alternative to lipio barium powder had been used for photographing t pelvis. No operation should be undertaken witho investigation by one of these methods. Dr. Rub had suggested that insufflation might remedy steril by displacing a plug of inspissated mucus.

Dr. GILES, Dr. FORSDIKE, and Mr. WALKER repli

Prof. VAUDESCAL then read a paper on

MYOMECTOMY DURING PREGNANCY.

This operation, he said, was to be avoided wh possible. The indications were (1) diagnosis of large fibroid before the third month; operation this time averted later complications; (2) unmista able signs of necrobiosis; (3) distortion of the ute likely to cause miscarriage; (4) torsion of the pedi of the tumour, which caused severe and lasting pai (5) pressure on neighbouring organs. In operati general anæsthesia was preferable to spinal becau it suppressed uterine contraction. The tumour w decapsulated by a single incision over its summ and all bleeding carefully stopped. When the fibr was between the layers of the broad ligament, must be approached by the transligamentous rou No drainage was provided, and one-sixth of a gr of morphine was given every six hours or less duri the three days after the operation. Out of eig myomectomies the child had been saved in sev Out of 21 cases of myoma, however, hysterecto had been obligatory in 13, and so operative interfere should be postponed as long as possible.

Mr. L. C. RIVETT (London) recognised only indication besides necrobiosis—excessive size.

Dr. GILES, Mr. FARQUHAR MURRAY, Prof. WHI HOUSE, and Mr. TENISON COLLINS also took part the discussion.

ACUTE CONDITIONS IN THE PELVIS.

Prof. W. W. CHIPMAN (Montreal) quoted Victor Bonney's saying that the propinquity of anus to the genital tract was a great defect in hum development. He added that, as far as he kn there was at present no remedy, but that this fa together with venereal disease, explained the liabil of the pelvis to acute infections. Moreover, pelvic cavity was the largest lymphatic space in body and had a corresponding absorptive power, that infection was always serious. It was a s of Valhalla for organisms, providing warmth, moistu and food. The "emergency abdomen" was alw a grave emergency; an abdomen once opened never the same abdomen, and the decision whet or not to open it was no light one. He objec

ongly to the term "giving the patient the benefit an exploratory operation." The surgeon might nefit; the patient was very often merely con-nned to an added injury. "Open and see" s foolish and might be criminal.

For the gynæcologist the most common abdominal ergencies were hæmorrhage, infection, and throm-sis or strangulation. These required most careful ferentiation. The two guiding principles were: to make a meticulous inquiry into the history the onset—this was often more valuable even an examination, and (2) to pass a catheter and amine the resulting urine. The chief symptom s pain. Pain was not always a liar, as Roche-ucauld had said, but the abdomen should never opened for pain alone. By far the most important n, qualitative and quantitative, was the abdominal ies, which never lied. In peritonitis it was anguished d apprehensive; in hæmorrhage it was pallid and xy, and the muco-cutaneous line of the lip stood t with undue prominence. The ashen face of ock and the cyanotic face of severe toxæmia were o distinctive. It was important to note the tient's attitude. If the lesion were intraperitoneal, lay on her back with the knees flexed, and any vement was a torture. If she could move readily d turn on her side, there was no grave abdominal ion.

Hæmorrhage.—The commonest site of this was a ptured tube, but it might also occur from a ruptured aafian follicle, or from the rupture of a uterus in our, or from perforation by a sound or curette. The tory was all-important, and in ectopic pregnancy ght be lacking altogether. The usual time for pture from this common cause was between the venth and twelfth weeks, and the most dangerous uations were the isthmus and cornua. The picture the cataclsymic case was a rapid pulse, subnormal mperature, and air hunger; the abdomen was quently tender and sometimes tympanitic. The t could sometimes be palpated in the pouch of uglas. The abdomen should be opened, a trans-ion given, and the tube removed. A case four five days old gave the picture of widespread ritonitis and bowel obstruction. In a so-called hronic" case there was a rapidly growing mass on e side or other of the uterus; decidual casts cilitated diagnosis. A leucocyte count of 20,000 inted to hæmorrhage rather than inflammation. exploratory colpotomy did little damage and was eful; if dark blood were found, the abdomen should opened at once.

Acute Infections.—The distinction between appen-citis and a tubal inflammation was all-important, , while an infected appendix should be removed at ce, it was a surgical disaster to open the abdomen acute salpingitis. Prof. Chipman detailed the ns and symptoms on which a differential diagnosis ould be founded. When in doubt, he said, watch d wait, hour by hour.

Thrombosis or Strangulation.—Patients were fre-ently aware of the presence of the neoplasm, ich was usually an ovarian cyst or a fibromyoma. in was severe and colic-like but short in duration. the condition were severe or examination delayed, e signs of peritonitis, due to infection from the on, might be superadded.

In suspected bowel obstruction the hernial orifices ould be examined. Intussusception was usually nfined to the young and adolescent. Iliocæcal mour led to a discharge of blood from the bowel; t-sided lesions might be palpated, and their mptoms were intermittent colic, altered bowel ttern, constipation, and sometimes vomiting from tiperistalsis. Diverticulitis of the lower colon s a lesion of old age and caused diarrhœa and ver. Stone in the ureter or renal pelvis was a mmon cause of the surgical violation of the abdomen.

conclusion, said Prof. Chipman, the function of e good surgeon should be to diminish surgery.

Dr. EVERARD WILLIAMS (London) divided acute lvic lesions into those accompanied by fever and shock respectively. Of the former, pyosalpinx or salpingitis might be suspected when a bilateral tumour or marked uterine tenderness occurred in a woman of child-bearing age. Operation should be delayed until the inflammatory process had become well established, as it was almost certainly a localising mechanism and not to be interfered with until it had obviously failed in its purpose. Acute pneumo-coccal peritonitis might simulate salpingitis, and its earliest symptoms might be referred to the pelvis. Signs on the right side alone made it necessary to distinguish between appendicitis and salpingitis. The latter was the last stage in a morbid process, evidence of which was usually to be found in the lower part of the tract. Left-sided symptoms, suggesting a tubal lesion, might be due to diverticulitis. X rays were of considerable aid in differential diagnosis, which was often complicated by œdema and hyperplasia.

The commonest lesion to be accompanied by shock was ectopic pregnancy. Few of the recent diagnostic aids were of much value; the phloridzin test indicated pregnancy only and the "shoulder pain" test gave positive results in other conditions. The diagnosis from torsion of the pedicle of an ovarian cyst was difficult. Other acute abdominal conditions causing shock were acute hæmorrhagic pancreatitis, volvulus of the small intestine during early pregnancy, and acute appendicitis. The importance of the early symptoms was exaggerated. The more urgent the symptoms of internal strangulation, the less likely was the lesion to be a strangulated cyst alone; some other condition was probably present. The two rules to follow were thorough examination of the whole abdomen and pelvis and, if the abdomen were opened, a thorough exploration of all the organs that might be diseased. The practice of removing the appendix through a "button-hole" incision was a bad one, as it allowed for no examination of the other organs.

Discussion.

Mr. L. C. RIVETT said that coliform infections were in his experience rare, and that the genital tract probably had a high degree of resistance to bowel organisms. Colpotomy entailed a great risk of infection of the blood mass. Like his colleagues, Mr. V. Bonney and Mr. A. Bourne, he was in favour of early operation on the tube. To wait until it became chronic lengthened the illness, and tubes were left alone, because of apparent subsidence, for years. They then presented one of the most formid-able operations in gynæcology. Surely the tube was causing the peritonitis, not protecting from it? He believed, however, in leaving an acute ovarian cyst for a time.

Prof. J. HENDRY pronounced strongly in favour of leaving tubal infections alone for weeks or even months; this made a much easier and more satis-factory operation and allowed the patient to benefit by her own healing power. A valuable aid in deter-mining the time of operation was the blood sedimentation rate; until this had absolutely returned to normal he did not like to operate. He himself treated ovarian cyst conservatively, giving complete rest and morphia for 24 to 48 hours. The patient was then much better able to tolerate operation. If left too long, however, torsion and multiple adhesions developed and the result to the patient was grave and unnecessary illness. The symptoms might pass as colic for months.

Dr. GRAY WARD (New York) voiced the strong American opinion against operation in acute salpingitis. The appendix could be dispensed with; the loss of the tubes meant sterility. Moreover, to wait gave the patient a better chance of surviving the operation if there had to be one. If it were to become the fashion to wear the tubes and ovaries outside, like the male genitalia, general surgeons would be less ready to operate radically.

Dr. A. GILES agreed with Dr. Williams in con-demning the button-hole incision. His experience of tubal infection had been that the operative risk

was much less if the acute phase was allowed to settle down a little. A tube, unlike an appendix, hardly ever perforated. On the other hand, a cyst with twisted pedicle called for immediate operation to prevent necrosis of the tumour, adhesion to the bowel, and peritonitis.

Prof. CHIPMAN, replying, deplored the number of patients who came with retroversion or prolapse that might have been detected and put right at a recent appendix operation if the general surgeon had thought to explore the pelvis as well. He encouraged Mr. Williams to give a fair trial to the operation on the acute tube, but said that his own experience of it had been decidedly unfavourable.

RADIUM THERAPY IN CARCINOMA OF THE CERVIX UTERI.

Dr. GRAY WARD read a paper with this title in which he outlined the results obtained at the Women's Hospital in New York during the past ten years. To assess the value of radium it was necessary to compare its results in operable cases. There were only a few extending back over five years, and his object was to fill this gap. He referred to the recently published statistics of Dr. Janet Lane-Claypon and Dr. Heyman, and compared them with his own. His hospital possessed only 280 mg. of radium salt, which was applied in rubber-sheathed platinum tubes in doses of 2200–4200 mg.-hours, but massive doses had proved elsewhere to give no better results. No high voltages nor X rays were used except to produce lymphatic block, where neighbouring viscera would not be damaged. An essential part of the treatment was close and individual supervision of every patient, and monthly observation for the rest of her life; this, by detecting recrudescence long before the patient was aware of it, was largely responsible for his hospital's results. Thirty per cent. of the patients had had more than one application, and many had had three or more. Subsequent doses were based on the initial reaction. Radium tubes were anchored by sutures at intervals not closer than 2 centimetres, and short needles were preferred to long. A self-retaining catheter was inserted at the same time as the radium. To combat sepsis during the sloughing stage, when toxins were being absorbed, blood transfusion was a valuable adjuvant. 500 c.cm. were given before dosage whenever possible. Daily douches were given to stimulate sloughing.

It was rarely possible to predict the course from the type of cell, as various kinds were usually present in different parts of the same growth.

Results.

The group numbered 134, treated between 1919 and the first five months of 1923, and the figures had been audited by professional statisticians. All cases were of carcinoma originating in the cervix, and none had been treated elsewhere. Of this number 126 had been traced, and 31 were still alive, a percentage of 24·6. Of Classes 1 and 2, where the growth was limited to the cervix, 17 were living out of 32 treated and 30 traced: 56·7 per cent. Heyman's figures had given 18 per cent. of successes from radical operation and 16·3 per cent. from radiological treatment; at his own clinic that author had returned 23·1 per cent., and the successes at the Radium-hemmet had been 22·4 per cent. Against this, however, had to be set a 17·2 per cent. primary mortality with surgery, against less than 2 per cent. with radium. The really vital comparison, of course, was in the "operable" group. Taking Heyman's figures operation had given 35·6 per cent. and radiology 34·9 per cent. At the Women's Hospital Clinic the successes in operable cases had numbered 53·1 per cent.

The stabilisation of therapy was hindered by a lack of standardisation in statistics. Dr. Ward advocated the recognition of two classes only, early and advanced, and that no results of less than five years' standing should be accepted, but approved of the four classes of Dr. Schmidt, of Chicago. Operability and primary mortality rates should, he sa always be given.

Mr. FARQUHAR MURRAY (Newcastle-on-Ty delivered a paper on the same subject, describi observations based upon over 200 cases treated wi radium since January, 1926, and a series of 130 radi Wertheim operations. His supply of radium h been limited to 100 mg. in hospital and 200 n of the salt in private practice. All cases w subjected to a thorough examination under ana thetic. 100 mg. were applied for 24 hours the os, or cavity if one existed. The patient th rested for 14 days. Operation was of doubt value when there were glandular deposits. Ope bility should be based on the local condition assessed by the possibilities of a radical operati and should not take into account the age or gene condition of the patient. The term meant that t growth was limited to the cervix or only involved t vagina to a limited extent, and that there was o a slight infiltration into the cellular tissue.

Twenty operable cases had been treated by radi before January of the current year. Two had r been traced, three had improved, three were stationa and 12 were worse or had died. Mr. Murray did r use radium before operation, as it seemed to ma the local condition worse and the operation a more vascular. It should be used if the ulcer w spreading on to the vagina, and there were so infiltration. The results had appeared to unfavourable to radium, but this was because had raised the standard of operability. It seem however, to increase operative risk. It undoubte improved the local condition in inoperable cas Of 23 inoperable cases treated in 1926 four w alive, but three of these were going downhill. 1920, however, radium had so improved five ca considered inoperable that the radical operat had been performed; two were alive and well w no evidence of recurrence. In his experien radium was invaluable and produced results lit short of miraculous in certain cases. It was parti larly useful in elderly women, in whom the malign cells were peculiarly susceptible to its action. had also given very encouraging results in 55 cases menorrhagia.

In conclusion, radium was practically as cert as hysterectomy, and was especially indicated disease of the heart, lungs, and kidneys, where l anæsthetics must be avoided, and in all nerv and elderly patients. It was not to be a rout measure for cases complicated by fibroids.

Discussion.

Dr. MABEL RAMSAY (Plymouth) urged the adv tages of radium therapy in avoiding operative sh and scar contraction, and in being within the capa of any surgeon of ordinary ability. The Med Research Council had given radium to three wome hospitals, and the general feeling was that all ca of cervical cancer should be taken to one of these

Dr. MARGARET BASDEN (London) testified to wonderful results in early disease obtained in hospitals mentioned. She preferred the Werth operation, however, in operable cases, especia where glands were involved. She did not appr of radium for non-malignant menorrhagia, fea its effect on the ovaries, especially of younger wom

Major P. FLEMING GOW (Calcutta) mentione diagnostic method he had learned in Vienna. suspected area was painted with glucose iodi any malignant tissue, even though not clinic recognisable, remained white. This was because cancer cells contained no glycogen and there could not fix the iodine. In Vienna he had s several cases cured by operation with an after-ef of chronic cystitis. He asked whether this occu with radium.

Dr. W. T. HALL (Newcastle-upon-Tyne), speak to general practitioners far from radium, exto opium as a palliative for both bleeding and

inoperable cancer and recommended frequent ching to protect the surrounding skin. Rest in was important, but not for too long, as it was better for the patient's psychic health to be up er ordinary work.

rof. J. HENDRY (Glasgow) recalled a suggestion Dr. Archibald Leitch that many supposedly ignant glands were really enlarged from ordinary ic absorption. This might account for much he rapid improvement under radium.

r. GILES agreed that the importance of the lvement of the higher abdominal glands was much ggerated. The trouble that mostly occurred r radical operation was low down at the scar. ethod that had given good results in the old days to scrape away as much of the growth as possible a vigorous curettage, and then to pack the ity with gauze soaked in a saturated solution of chloride. The vagina was protected by being d with carbonate of soda. This prolonged life comfort for perhaps three years, and freed the ent from the constant irritation of septic discharge.

he Chairman, Prof. W. FLETCHER SHAW (Manster), admitted that he was an ardent operator, had come to a stage of doubt. Anyone with any anity who had seen these women in the long-wn-out convalescent stage would never operate e thought he could get anything like such good lts with radium. The trouble was that the results England did not approach those of Sweden and erica. He doubted, also, whether the policy in country of leaving radium entirely in the hands he radiologists had been right, and thought that, English gynæcologists treated their own patients h radium as their colleagues did abroad, their lts would soon be equally good. Those obtained the Medical Women's Federation had given great mise. Though he did not yet feel justified in ing that he would not operate on every early case, hoped that in the future every early case would treated with radium.

Dr. WARD, replying, said that he would not take a uterus as a precautionary after-measure if patient was perfectly well; that most glandular argement in early cases was non-malignant, and t in America a campaign was on foot to get every nan past 40 to come for systematic examination.

Dr. MURRAY, replying, said that at least half the ndular enlargements were malignant, and suggested t some underwent natural cure. He was opposed applying radium to the uterus of a young woman ess hysterectomy was the only alternative.

DONATIONS AND BEQUESTS.—Among other bequests George A. Wills, of Bristol, left £1000 each to the Bristol Hospital, the Bristol Royal Hospital for Sick Children Women, and the Bristol District Nurses' Society, and to the Bristol Eye Infirmary.—Mrs. Elizabeth Frances on, Torquay, left £500 each to the Torbay Hospital, Aberlour Orphanage, Strathspey, and the Hostel for the ng, Clapham.—Mrs. Christina Elizabeth Feeney, of the t, Berkswell, Warwick, left £1000 to the Birmingham nen's Hospital and £500 each to the Birmingham General pital, Queen's Hospital, and the Children's Hospital, ningham.—Over £7000 will pass to charitable objects er the will of Mrs. Ethel Alexandra Johnson, of Allestree , Derby. The bequests include £1000 to Derbyshire al Infirmary, and £500 each to the Derbyshire Hospital Sick Children, Nightingale Nursing Home, Derby, and en Victoria Memorial Home of Rest, Derby.—Mr. mas Leigh Parry, Liverpool, besides other bequests, left 00 to the Royal Infirmary, Liverpool, for the endowment bed in memory of his late brothers, and a further £1000 the endowment of a bed in memory of his sister and self.—Mr. Andrew MacFarland, of Pembroke, Co. lin, left £2000 each to Dr. Barnardo's Homes and to Magdalen Asylum, Lower Leeson-street, Dublin; £1000 he Royal Hospital for Incurables, Donnybrook, Dublin, £500 to St. Dunstan's Hostel for Sailors and Soldiers ded in the War.—One thousand guineas is to be handed for the extension fund of the Huddersfield Infirmary he villagers of Denby Dale as a result of their great making exertions.—The residuary legatees of Mr. n Cory have allocated the sum of £1000 to the London k Hospital.

Special Articles.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

A School Experiment.

A SCHEME of research is to be undertaken in the Fifeshire schools with the aim of guiding pupils in the choice of suitable vocations. The experiment differs in two respects from a similar one in the City of London, also organised by the National Institute of Industrial Psychology. It is hoped to secure the coöperation of teachers on a more active basis than in London, particularly in obtaining information of occupational success; and whereas in London all schools were necessarily urban, in Fifeshire two groups of schools have been selected—one rural, the other urban—with the hope of learning by comparison something of the occupational problems of the two types. The examination and study of individual children are to begin between the ages of 11 and 12, and to continue with periodic re-examinations until the termination of school life. Teachers will be asked to supply all the information they can gather of the previous history, health, school record, and home circumstances of the pupils. The medical officer will furnish particulars of the child's physical condition, with an estimate of fitness (or otherwise) for occupations requiring certain degrees of strength, sensory acuteness, and the like; whilst the school records and tests by investigators will indicate mental capacity as well as qualities of temperament and character. Out-of-school activities will come within the scope of the inquiry, and note will be taken of the pupil's hobbies, occupations, ambitions, and opportunities. Some time prior to the pupil leaving school, when the data have been summed up and considered, advice will be given, in consultation with teachers, parents, and child, as to the selection of a suitable vocation. The Carnegie Trustees are assisting the education authority with financial support.

Occupational Therapy.

The report of the General Board of Control sets out how the practice of occupational therapy is being steadily extended in the Scottish mental hospitals. The benefits to the patients have been a matter of frequent comment, and it only required the exhibition of work from all the institutions which recently took place at Bangour to demonstrate into what varied and useful channels it is possible to direct the energies of patients who before the introduction of occupational therapy were apparently unable to do anything of a useful nature, and whose habits were destructive and costly. Many guardians have now set apart a room in which boarded-out patients can sit during the long winter evenings. "These long, dark winter evenings," Dr. H. Ferguson Watson says, "are taken up with such amusements as solving cross-word puzzles, playing games at chess, draughts, dominoes, and carpet bowls, listening to much varied music, lectures, and sermons on the wireless set, and to the gramophone. Some of the patients are accomplished musicians themselves, and entertain their companions with selections on violin, piano, melodeon, concertina, mouth organ, and even a tin whistle. Indeed, some are so expert that their services are in much demand for local gatherings." A proportion of guardians take their patients to the theatre, to concerts, and to lectures, while in all cases where the mental condition will permit the patient is allowed to attend divine service

Observation Mental Wards.

Another subject dealt with by the Board of Control in their report is, as you have noted already, the successful operation of the observation wards established by the parish councils. These have partially served the purposes of the dispensaries and clinics well known in France, Belgium, and the United

States. These wards are conducted on hospital lines, and their beneficial effect may be seen from the fact that no fewer than 1240 patients passed through them at Stobhill and Duke-street during one year, and of these 788 returned to their homes without the necessity for certification. In the foreign clinics the advantages are even greater, inasmuch as patients requiring advice do not become "paupers" in the process, while mild cases of nervous and mental breakdown seek skilled advice more freely and receive the special treatment, which, owing to its cost, can be adequately provided only by public authorities. For such patients there is no public provision here beyond the observation wards, the majority being unable to afford the expense of private nursing homes. Early stages of functional nervous and mental disorder are left uncared for or treated in such a desultory manner that in the long run the majority seek admission as voluntary boarders or are certified to asylums. In Scotland the extension of the General Board's powers so as to include all matters relating to mental health should present no great difficulty. This was the course recommended by the Royal Commission last year. If the £115,000 granted annually to improve the care of the lunatic could be allotted at the discretion of the Board to assist all mentally defective persons other than those provided for as mental defectives, no matter what their circumstances or station in life, the objects of the Board would be better furthered.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Professional Secrecy.

THE annual meeting of the Aerzte-vereinsbund was held this year at Danzig, where the most interesting order of the day was professional secrecy, the speakers including medical men and criminologists. Dr. Vollmann, the editor of the Bund's journal, pointed out that professional secrecy is no longer absolute since the laws on workmen's insurance and recently on venereal diseases compel medical men in certain cases to reveal facts concerning their patients. But apart from those exceptions the patient has a right to be protected against indiscretion on the part of his medical attendant as well as of assistants, nurses, and students. Dr. Ebermayer, ex-Public Prosecutor at the High Court of Leipzig, said that the provisions of the criminal law which make a medical man liable to punishment if he violates professional secrecy concern qualified men only. A patient consulting a non-qualified person should be aware that neither can he rely on his professional secrecy nor can he prosecute him should he reveal facts concerning his illness. In the new Criminal Bill shortly to come before Parliament these provisions will be extended to include assistants, nurses, and students. It will also be made illegal for a medical man to confirm a rumour concerning one of his patients. A patient may discharge his medical attendant from the obligation of professional secrecy, but may at any moment revoke this discharge. If a patient has died the good renown of the deceased demands that the medical attendant should observe professional secrecy in the same way as if he were still alive. There are, however, circumstances, legal and social, where these professional rules may be infringed. According to recent legislation taxing authorities are authorised to examine the books kept by medical men. The production of histories of patients written by medical men or in hospitals may be enforced by an order of court and in urgent cases by the police. The principle stands that professional secrecy must be kept as strictly as possible and infringed only when the law obliges. Dr. Hagemann, head of the detective department of the Berlin police, said it often happened that a criminal was injured at the commission of a crime and inquiry was made by the police at hospitals and from medical men for the names of any persons who might have been dressed for injuries about that time. Their inquiries were often, however, fruitless becaus medical men declined to answer such questions on th plea of professional secrecy. But there are, he said overruling moral obligations. In the instance of terrible murder a Berlin medical man, after havin scrupulously considered all the circumstances, ver reluctantly revealed the name of the criminal dresse by him, so that he could be arrested by the police He was sure no one would blame the medical man fo his action. The meeting ended with the passing of motion to the effect that the rules of professiona secrecy should not be remitted except for reasons o public welfare, that judicial orders to produce book kept by medical men should be prohibited, and tha the forthcoming reform of the criminal law shoul contain provisions to that effect.

The Socialist Party and the Medical Profession.

The number of medical members in the recentl elected Reichstag is only four, of whom one is democrat, one a member of the Bavarian popula party, and two Socialists. Owing to the increase influence of the Socialist Party it is of interest to kno their medical programme. It is explained by Pro A. Grotjahn, who, although not belonging to th Reichstag, is an influential member of the party an occupies the chair of social hygiene at Berlin Unive sity. Prof. Grotjahn demands that medical practic should be nationalised by an extension of th existing social insurance system, now limited t certain classes of workers, to every member of th population. Hospitals, dispensaries for infants, fo tuberculous and venereal patients would form th nucleus of socialisation. All private institutions, suc as sanatoria and convalescent homes, would be take over. The medical profession would work in these inst tutions under better conditions than hitherto. The would have the rights of civil servants, their wor would be done in common, and thus more economi ally; they would also enjoy the leisure hithert denied to them. Pharmacies and factories producin chemical agents and sanitary appliances would b owned by the State. Prof. Grotjahn, who belongs t the moderate wing of the Socialist Party, believe these measures would have to be introduced gradually for a period the socialised and the capitalistic institu tions would exist side by side. It may be pointed ou that these principles to some extent have been pu into practice by the sick clubs of Berlin, especiall those the greater part of which are under Socialis management. They have set up dispensaries fo nearly every kind of disease at which appointe medical men are working. They have fitted out thos dispensaries with modern apparatus and wit laboratories. They have stocked drugs the provisio of which is not reserved by law to licensed chemist When such a drug is prescribed by a medical man th patient is obliged to fetch it not from a pharmacy o a drug store, but from the drug store of the sick clu Prof. Grotjahn's plan aims at extending this syste to the whole population.

Statistics of Suicide.

Dr. Prinzing, of Ulm, the well-known medic statistician, has published a report on suicides Germany and abroad. Of the German States Saxon has the greatest number—namely, 31·9 for eac 100,000 of the population during the period 1900 1910. This figure increased from year to yea reaching 36·6 in 1925 and 38·1 in 1926. In Pruss the corresponding figures were 21 and 25·4. Th lowest numbers were those of Bavaria and of Wurtem berg. The figures of Switzerland were nearly th same as those of Germany. In Austria and in Hunga they were much higher. France had about 20 suicid for every 100,000, Belgium 13–14. The lowest numb in Northern Europe were those of the Netherlands wi 6 and of Norway with 5 suicides for every 100,00 In Southern Europe the number of suicides was alwa very small, but in recent years a certain increase h been observed in Italy and in Spain. Immediate after the war suicides were more frequent amo women than among men.

THE MEDICAL REGISTER: UNTRACEABLE PRACTITIONERS IN 1928.

WE are requested by the Registrar of the General Medical Council publish the following list of medical practitioners who have not plied to his inquiries as to the accuracy of their addresses. Anyone, herever resident, who finds his or her name included in this list should mmunicate immediately with the Registrar of the General Medical ouncil, 44, Hallam-street, Portland-place, London, W. 1, otherwise e name will be omitted from the next issue of the Medical Register. here may be some who have answered while this list is in the press. hose marked "S" should communicate direct with the Registrar of e Scottish Branch Council, 12, Queen-street, Edinburgh.

kins, Thomas E., L.A.H., 1877(I).
su, Dharmadas, L.R.C.P.S., 1876(S).
xter, George S. M., L.R.C.P., 1882(I).
yfield, Thomas F., L.R.C.P.S., 1916(S).
nson, John P., M.B., 1922(I).
rnstein, Harry L., L.M.S.S.A., 1924(E).
rke, Frederick A., M.B., 1912(I).
sby, George A., M.B., 1925(I).

ble, Walter G. H., L.S.A., 1906(E).
mpion, Oliver St.L., M.R.C.S., 1917(E).
rroll, John D., *M.C.*, M.B., 1913(I).
ew, William R., M.B., 1888(S).
lbert, Redmond J., M.B., 1921(I).

vin, Alfred L. V., M.B., 1916(S).
vies, Thomas H. R., M.R.C.S., 1922(E)
mpsey, George A., M.B., 1922(I).
vecha, Rustom F., L.M.S.S.A., 1920(E)

rrell, Edward D., M.D., 1908(Col).

ras, Habid, M.B., 1916(E).
ntil, Joseph E. H., L.R.C.P.S., 1899(S).
eene, Gerald, M.B., 1926(I).
imoldby, James, L.M.S.S.A., 1908(E).

ackney, Gordon H., M.R.C.S., 1901(E).
ines, Humphrey, L.R.C.P., 1879(I).
ll, John W., L.A.H., 1886(I).
lloran, (Mrs.) Kathleen M., M.R.C.S., 1926(E).
llsworth, Francis A., M.R.C.S., 1876(E).
llwright, Matthew L. G., M.R.C.S., 1895(E).
mada, Gawad, M.R.C.S., 1925(E).
mlin, Alfred E., M.R.C.S., 1916(E).
mman, Dirk J. H., M.B., 1902(S).
ncock, Eric L., M.B., 1911(E).
nington, John W. B., M.R.C.S., 1912(E)
nnigan, Timothy H., L.R.C.S., 1887(I).
rcourt, Averyl, M.B., 1906(S).
rper, Frederick G., *M.C.*, M.B., 1907(S).
rper, Gerald S., M.R.C.S., 1874(E).
rris, Arthur T., M.B., 1919(S).
rris, Lucy E., M.B., 1898(E).
rris, Matthew H., M.B., 1903(E).
rte, Joseph, M.B., 1922(E).
rtford, William, L.R.C.P., 1887(I).
rtley, Evelyn F., M.B., 1926(S).
rvey, Henry F., M.R.C.S., 1876(E).
user, Philip, L.R.C.P., 1863(E).
wkes, Henry, L.R.C.P., 1924(I).
yden, Richard H. H., L.R.C.P., 1892(I).
ydon, Arthur G., L.S.A., 1892(E).
yes, Julian P. S., L.R.C.P., 1885(E).
yes, Simeon A., L.M.S.S.A., 1922(E).
zel, William F., M.R.C.S., 1871(E).
aley, Coryndon W. R., *C.M.G.*, *C.B.E.*, L.K.Q.C.P., 1888(I).
aly, Francis, M.B., 1920(I).
eland, Patrick A., L.R.C.S., 1886(I).
lm, John K. A., L.M.S.S.A., 1908(E).
nnessy, Cornelius, L.R.C.P., 1918(I).
nry, Lydia M., M.B., 1916(E).
rmitte, Louis C. D., M.B., 1918(S).
slop, William J., L.K.Q.C.P., 1883(E).
ssion, John E. I. E., M.B., 1925(I).
ckey, William, M.B., 1919(I).
ghfield-Jones, Gabrielle M., M.R.C.S., 1924(E).
ll, James M., M.B., 1921(I).
nchoo, Harold, M.R.C.S., 1924(E).
oare, Reginald C. M., L.R.C.P.S., 1899(S).
odgman, Jan H., M.B., 1923(I).
ogg, Alexander W., *O.B.E.*, M.B., 1904(S).
ogg, Charles A., M.B., 1893(E).
olland, Edward, M.B., 1921(I).
oneybourne, Victor C., L.R.C.P., 1906(E).
ood, James C., M.D., 1883(I).
ookham, Paul, M.R.C.S., 1876(E).

Hope, Percy L., L.R.C.P., 1899(E).
Hopkins, John, M.R.C.S., 1876(E).
Horsham, Joseph, L.R.C.P.S., 1905(S).
Hort, Frederick A., L.S.A., 1901(E).
Hottinger, Edward F., L.M.S.S.A., 1925(E).
Hubbard, Thomas C., L.R.C.P.S., 1874(S).
Huffton, Edith, L.R.C.P., 1915(E).
Hughes, Hugh L., L.S.A., 1886(E).
Hulbert, Henry L. P., M.R.C.S., 1901(E).
Hunter, Douglas A., M.B., 1921(S).
Hunter, Ellis G., M.B., 1923(S).
Hurwich, Jack, M.B., 1920(S).
Huskisson, Douglas S., M.R.C.S., 1924(E).
Huston, John A. F., M.B., 1926(I).
Hutt, Herbert A., M.R.C.S., 1899(E).

Ibrahim, Aziz Y., M.R.C.S., 1921(E).
Irving, Hamilton, M.B., 1904(E).
Island, Robert L., L.K.Q.C.P., 1886(I).

Jackman, James J. H., L.R.C.S., 1884(I).
Jackson, Harold E. A., M.R.C.S., 1901(E).
Jaffe, Mossy, M.B., 1923(I).
Jaffit, (Mrs.) Bertha (formerly Kahn), M.B., 1923(E).
James, Henry W., M.R.C.S., 1903(E).
James, William A., M.R.C.S., 1906(E).
Janse van Rensburg, William J., M.B., 1924(I).
Jardine, Robert, M.B., 1886(S).
Jeaffreson, George C., M.R.C.S., 1892(E).
Jehansart, Irma M. C., M.B., 1920(E).
Jenkins, Winifred M., M.R.C.S., 1922(E).
Jennings, Edward, M.R.C.S., 1878(E).
John, Cherukaud M., L.M.S.S.A., 1923(E).
Johnson, Emily E., M.B., 1926(E).
Johnson, George L., M.R.C.S., 1881(E).
Johnson, (Mrs.) Hester M., (formerly Church), M.R.C.S., 1916(E).
Johnson, Philip, L.R.C.P., 1890(E).
Johnson, William, L.R.C.P., 1890(I).
Johnston, John S., L.K.Q.C.P., 1874(I).
Jones, Gilmore L. C., M.R.C.S., 1926(E).
Jones, John D., M.R.C.S., 1877(E).
Jones, John H., M.R.C.S., 1899(E).
Jones, (Mrs.) Olive L. (formerly Baile), M.B., 1920(I).
Jones, Thomas, L.S.A., 1897(E).
Jones, Thomas C. L., M.R.C.S., 1897(E).
Jones, William H., L.R.C.P.S., 1896(S).
Jones, William W., M.B., 1904(E).
Joseph, Hugh P., L.M.S., 1921(E).
Juett, Alexander, M.B., 1913(E).
Juliani, Giuseppe, M.D., 1927(For).

Kalomiris, Nicholas J., M.R.C.S., 1901(E).
Kamchorn, Nai, M.R.C.S., 1917(E).
Kanga, (Mrs.) Phiroza H. D. (formerly Malabari), L.R.C.P., 1913(E).
Kapur, Kanhaya L., M.B., 1913(E).
Katz, David, M.B., 1925(E).
Kazim, Aga M., M.R.C.S., 1919(E).
Kean, Francis J., M.B., 1917(I).
Keays, Samuel, L.R.C.S., 1876(I).
Keenan, James, L.R.C.S., 1882(I).
Kelly, Edmund P., L.R.C.P.S., 1899(S).
Kelly, John, L.R.C.P., 1913(I).
Kenna, Michael F., L.R.C.S., 1881(I).
Kenny, Randal Y., M.R.C.S., 1911(E).
Key, James, M.B., 1876(S).
Keyes, John E. L., L.R.C.P.S., 1913(S).
Keys, William D. A., *C.I.E.*, M.B., 1898(I).
Khair, Abd E. A., M.R.C.S., 1924(E).
Khan, Latafat H., M.R.C.S., 1911(E).
Khan, Masha A., M.R.C.S., 1889(E).
King, Hilda M., M.R.C.S., 1926(E).
King, Stanley W. M., M.R.C.S., 1924(E).
Kingdon, Wilfred, M.B., 1895(E).
Kingston, Henry D. R., M.B., 1879(E).
Kirkland, Gerald B., M.R.C.S., 1923(E).
Knight, Harriet E. J., M.B., 1895(E).
Knox, David N., M.B., 1909(S).

Labuschagne, Paul N. H., M.B., 1925(I).
Lahiff, James G., M.B., 1921(I).
Lala, Daulat M., M.R.C.S., 1918(E).
Lang, Richard, M.B., 1922(I).
Langley, Doris M., M.B., 1922(E).
Lanyon, Edgar T., M.R.C.S., 1896(E).
La Touche, Edmund D., L.R.C.S., 1884(I).
Laurence, Charles S., L.M.S.S.A., 1923(E).
Law, (Mrs.) May E., M.B., 1917(S).
Lease, Charles R., M.B., 1903(E).
Leeman, Percival G., *M.C.*, M.B., 1913(I).
Leftwich, Phillip, M.R.C.S., 1923(E).
Leggatt, Charles A. S., M.B., 1886(E).
Leviseur, Herbert J., M.R.C.S., 1918(E).
Levy, Oscar L., M.R.C.S., 1895(E).
Lewellin, Augustus J. R., L.K.Q.C.P., 1879(E).
Lewin, Harold, M.B., 1923(I).
Lewis, William M., M.D., 1886(I).
Leyburne, Edward S., L.R.C.P., 1890(I).
Lloyd, Thomas P., M.R.C.S., 1917(E).
Lorimer, Janie, M.B., 1898(S).
Loubser, Cornelius J. N., M.B., 1924(I).
Louw, Hendrik J., L.R.C.P.S., 1920(S).
Love, Herbert, M.R.C.S., 1902(E).
Lovegrove, Charles, L.R.C.P., 1882(E).
Lovegrove, Thomas H., M.R.C.S., 1899(E).
Low, Robert B., M.R.C.S., 1906(E).
Lowenstein, Lillian, M.R.C.S., 1919(E).
Lubbe, Willem P., M.B., 1917(I).
Lucas, George, M.R.C.S., 1867(E).
Lum, Kim S., L.R.C.P., 1926(E).
Lundie, Francis W., M.B., 1903(S).
Lunn, John, M.B., 1900(S).
Luther, David S., L.R.C.P.S., 1916(S).
Lynch, James A., M.B., 1916(I).
Lyndon, Eric J., M.B., 1918(I).

McAleer, James, L.R.C.P., 1919(I).
McArdle, John J., M.B., 1922(I).
MacAulay, Ambrose, L.A.H., 1922(I).
Macauley, Maurice J., M.B., 1902(I).
McAvoy, James, M.D., 1885(I).
McBurney, John H., M.B., 1895(I).
McCarthy, Thomas J., M.B., 1923(I).
McCausland, Samuel R., L.R.C.P., 1901(I).
MacClancy, Daniel I., M.B., 1912(I).
McColl, Alfred G., M.B., 1918(E).
MacDiarmid, James B., M.B., 1905(S).
Macdonald, James, M.B., 1921(S).
McDonnell, Charles, L.R.C.P., 1913(I).
McEnery, William A., M.R.C.S., 1900(E).
McEntire, Ronald G. J., M.B., 1912(I).
Macfie, Ronald C., M.B., 1897(S).
McGee, Sarah A., M.B., 1923(I).
McGettigan, John, M.B., 1917(I).
McGowan, James W., M.B., 1924(S).
McGowan, William, M.D., 1871(I).
McGregor, Beatrice A., M.B., 1898(S).
McGregor, Donald F., M.B., 1921(S).
McGregor, Robina, M.B., 1899(S).
McGuire, Michael, M.B., 1911(I).
McGuire, Walter G., L.R.C.P., 1911(I).
McIlroy, Alexander J., M.B., 1894(S).
McInnes, James M., L.R.C.P.S., 1922(S).
Macintosh, Archibald M., M.R.C.S., 1902(E).
MacKay, Janet M., M.B., 1924(S).
Mackay, Kenneth A., M.B., 1924(S).
Mackay, Margaret S., M.B., 1925(S).
McKechnie, William E., M.B., 1897(S).
McKee, William C., M.B., 1919(I).
McKenna, Edward J., M.B., 1902(I).
McKenna, John H., L.A.H., 1916(I).
Mackenzie, Ian F., L.M.S.S.A., 1915(E).
Mackenzie, Joseph R. M., *M.C.*, M.B., 1916(I).
Mackenzie, Murray, L.R.C.S., 1878(I).
McKillop, Alexander, L.R.C.S., 1885(E).
Mackinnon, Grace C. C., L.R.C.P.S., 1889(S).
McLaughlin, Agnes, M.B., 1923(I).
MacLaverty, Rose A., M.B., 1921(I).
McLean, Charles A., M.B., 1879(S).
Macmullen, James C., L.R.C.S., 1881(I).
McNair, Herbert, *M.C.*, M.B., 1921(S).
MacNeill, Catherine, M.B., 1924(I).
McNeill, Henry, M.B., 1920(I).
McOscar, John, L.S.A., 1888(E).
Macphail, Dugald H., M.B., 1902(S).
MacRury, Colin W., M.C.P. & S., 1916(Col).
McWhirter, James, M.B., 1924(S).
Madden, Richard R. M., L.R.C.P., 1891(I).
Madhok, Mohkam C., M.B., 1922(E).
Magan, Michael J., L.R.C.S., 1887(I).
Majmundar, Premrai T., M.B., 1916(E).
Malik, Sultan B., M.R.C.S., 1926(E).
Manker, Vinayak L., L.R.C.P., 1899(E).
Manook, George, M.B., 1885(S).
Marsh, Sylvia, M.B., 1915(I).
Marshall, Edward H., *D.S.O.*, M.R.C.S., 1914(E).
Martin, George A., M.R.C.S., 1924(E).
Martin, John H., M.B., 1900(E).
Mason, Robert D., L.M.S.S.A., 1926(E).
Massey, David, L.R.C.P., 1898(I).
Matthews, Thomas M., L.R.C.P., 1920(I).
Maximos, Youanis, M.R.C.S., 1922(E).
Maynard, John S., M.B., 1891(S).

Meilamed, Nathan, M.B., 1921(S).
Meldrum, (Mrs.) May I. T., M.B., 1917(S).
Meredith, John B., L.R.C.S., 1888(I).
Meyer, Benjamin A., L.R.C.P.S., 1925(S).
Miller, Richard, M.B., 1884(I).
Milliard, Peter M., L.R.C.P.S., 1923(S).
Mills, Henry W., L.R.C.P., 1895(E).
Milne, John, M.B., 1922(S).
Minnes, Robert S., M.R.C.S., 1896(E).
Moffatt, Douglas M., *M.C.*, M.B., 1909(I).
Moir, Kenneth T., M.B., 1925(S).
Moir, Leonard J., M.B., 1913(S).
Molloy, William J., M.B., 1892(I).
Monaghan, Patrick J., M.R.C.S., 1911(E).
Monckton, Henry H., L.S.A., 1898(E).
Montgomery, William A., L.S.A., 1896(E).
Moody, Cyrus M., L.M.S.S.A., 1925(E).
Moon, Harold J., M.R.C.S., 1903(E).
Moore, Alfred, M.B., 1892(I).
Moore, James, L.M.S.S.A., 1922(E).
Moore, James H., M.B., 1903(I).
Morgan, John F. H., M.R.C.S., 1909(E).
Morgan, John G., *M.C.*, L.M.S.S.A., 1910(E).
Morison, Frederick W., M.R.C.S., 1886(E)
Morris, Edward W., M.R.C.S., 1887(E).
Morrison, Michael W., M.R.C.S., 1911(E).
Morrison, William W., M.B., 1916(S).
Moss, Arthur J., L.S.A., 1888(E).
Mosse, Cotton G. T., M.R.C.S., 1915(E).
Mulhern, Annie, M.B., 1924(I).
Mulholland, Daniel J., M.B., 1903(E).
Muller, Hilgard, M.B., 1920(1).
Mulligan, Bernard J., L.R.C.P., 1922(I).
Murnane, John I., M.B., 1913(I).
Murphy, James C., L.R.C.P., 1924(I).
Murphy, John K., M.B., 1926(I).
Murphy, Mary A., M.B., 1913(E).
Murphy, Patrick D., M.B., 1916(I).
Murphy, Timothy, M.B., 1919 (I).
Murphy, Timothy M., M.B., 1922(I).
Murphy, Walter J., L.R.C.P., 1901(I).
Murphy, William P., L.Med.L.S., 1900(I),
Murray, Charles F. K., *O.B.E.*, L.R.C.S., 1869(I).
Murray, James C., L.R.C.P., 1924(I).
Mutis, Aurelio, L.R.C.P., 1893(E).

Nadicarianda, Carriappa A., M.R.C.S., 1924(I).
Naz, Jean B. C. O., M.R.C.S., 1899(E).
Neal, Frederick A., M.B., 1886(S).
Nel, John A., L.R.C.P.S., 1922(S).
Neville, Thomas, M.D., 1874(E).
Newman, William P., M.R.C.S., 1921(E).
Nichol, Robert, M.B., 1892(S).
Nichols, Frederick P., M.R.C.S., 1881(E).
Nicolls, Cecil G. J., M.B., 1924(I).
Noad, Ernest, M.R.C.S., 1885(E).
Noble, Mary A., M.B., 1915(S).
Nolan, Ernest D., L.R.C.P., 1925(I).
Norman, Doris B., M.B., 1920(E).

O'Brien, Donal H., M.B., 1926(I).
O'Brien, James M., M.R.C.S., 1902(E).
O'Carroll, Martin, L.Med.L.S., 1875(I).
O'Connor, Caroline, M.B., 1921(I).
O'Connor, Gladys C. J., L.R.C.P., 1920(I).
O'Connor, William A., L.M.S.S.A., 1920(E).
O'Conor, Sir John, *K.B.E.*, L.Med.L.S., 1886(I).
Oddy, John R., M.B., 1925(E).
O'Donoghue, James B., L.A.H., 1911(I).
O'Donovan, Patrick H., M.R.C.S., 1923(E).
O'Flanagan, Mary M., M.B., 1923(I).
O'Flanagan, Pauline K., M.B., 1924(I).
O'Flynn, James P., M.B., 1914(I).
O'Flynn, Jerome, M.B., 1913(I).
O'Grady, Anthony T., L.R.C.P., 1923(I).
O'Grady, Donald de C., *D.S.O.*, L.R.C.P., 1905(E).
O'Grady, Patrick J., M.B., 1924(I).
O'Kelly, James J., M.B., 1909(I).
O'Loghlen, John E., L.R.C.P., 1912(I).
O'Malley, David J., M.D., 1882(E).
O'Meara, John F. C., M.B., 1915(E).
O'Neill, Patrick, M.B., 1917(I).
Oram, Arthur M., M.B., 1880(E).
O'Reilly, Francis J., L.R.C.P., 1868(I)
Orfeur, Charles H., M.R.C.S., 1868(E)
Orisadipe, Obasa of Ikija (Princ
M.R.C.S., 1891(E).
Orrin, Herbert C., *O.B.E.*, L.R.C.P. 1907(S).
Osborne, Thomas, L.R.C.P., 1926(I).
O'Sullivan, David, L.R.C.P., 1909(I).
Owen, Allan C., M.B., 1903(S).
Owens, Edward M., M.R.C.S., 1868(E)

Parker, Charles, M.B., 1892(S).
Paton, George A., L.A.H., 1887(I).
Pierpoint, Harry W., M.R.C.S., 1902(
Pilgrim, Eustace G., M.B., 1889(S).
Pope, Henry B., M.B., 1881(I).
Power, Patrick W., L.R.C.P., 1902(I)
Prentice, Thomas, M.B., 1923(S).
Price, William, M.D., 1868(I).

Quigley, Matthew J., L.A.H., 1886(I).

Read, Edward I., L.S.A., 1879(E).
Ross, Alexander F., M.B., 1915(S).
Rowe, John M., *M.C.*, M.B., 1912(I).
Russell, Elizabeth D., M.R.C.S., 1918(

Sanders, Ernest L., M.B., 1921(S).
Savage, John J., M.R.C.S., 1917(E).
Servante, Stewart Q., M.R.C.S., 1925(
Sharman, Edward W., L.R.C.P 1891(S).
Shaw, George I., M.B., 1924(S).
Stuart, Christina, M.B., 1922(S).
Sturges, Frank, L.S.A., 1883(E).
Supramanian, Vytilingam, L.M.S., 1
(Col).
Swinton, Lt.-Col. Francis E., *C.I.*
M.R.C.S., 1891(E).

Twells, Charles H., L.R.C.P., 1904(I)

Watt, Thomas M., M.B., 1908(S).
Webster, Percy S., M.R.C.S., 1886(E)
Whyte, Frederick H., M.B., 1923(I).

MEDICINE AND THE LAW.

The Law of Incest.

On a charge of incest, brought against an uncle and his niece by marriage, the accused were found guilty in the Glasgow High Court on August 28th after some debate regarding the degrees of relationship within which marriage is illegal. Though ancient history contains hints that in certain royal dynasties the marriage of brother and sister was not unknown, society has placed its taboo upon in-breeding, and the laws of England and Scotland reflect the specific inhibitions of the Old Testament. A Scots Act of 1567 declares incest to be a high crime and offence (a phrase which is equivalent to a "felony" in English law) and defines it by allusion to Chapter 18 of Leviticus—an early example of legislation by reference. When Parliament permitted a man to marry his deceased wife's sister (in 1907) and his deceased brother's widow (in 1921), Scots law must have ceased to regard these particular unions as criminal. In the recent case at Glasgow the uncle and niece, by marriage, had apparently been unaware that they stood within the prohibited degrees. As the prosecution observed, if public sentiment no longer sees objection to the matrimonial relationship of an uncle with his niece by marriage, Parliament will no doubt alter the law.

The same ignorance of the offence of incest has been freely noticed in England. Originally the offence —i.e., of sexual intercourse between persons within the prohibited degrees of affinity or consanguinity as annexed to the Book of Common Prayer—was a matter for the ecclesiastical courts only; it was there punishable by excommunication and penance. In the case of criminal assault the ordinary courts might take note of the fact that the assault had been incestuous in character and might on that account increase the punishment within the court's discretion; but the ordinary criminal courts had no jurisdiction to try incest as such until it was made a misdemeanour in 1908. The 1908 Act, which applied to England and Ireland, concerned the relations of a man with his grand-daughter, daughter, sister, or mother. The natural hesitation to give publicity to the evidence in trials of this nature resulted in the insertion of clause providing that all proceedings under the A should be held in camera. But this restriction w found to be ill-considered, as might also probab be said of the restrictions regarding divorce cou reports under the 1926 Act. Lord Darling and oth judges recorded their experience at assizes a declared that the secrecy led to widespread popu ignorance of the law. Eventually, in 1922, the clau was, as respects England, repealed. Prosecutio are rare; the cases, when they occur, usually seem be due to inadequate housing and a drunken fath So far as concerns the marriage of persons within t degrees at present prohibited, it will be remembe that a Bill specially dealing with the case of unc and nieces by marriage was narrowly defeated l session, mainly on the appeal of the veteran Ar bishop of Canterbury, who was making his fi official utterance in the House of Lords. Ecclesi tical opinion is against any relaxation of exist limits; what does medical opinion say?

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. R. W. Mussen to be Surg. Lt.-Comdr.

J. G. Paley as Surg. Lt. for short service, and apptd *Victory* for Haslar Hospl.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lt. H. G. Ungley to be Surg. Lt.

H. A. M. Whitby entered as Proby. Surg. Lt., and atta to List 2 of the London Division.

Proby. Surg. Sub-Lt. J. M. Ridyard to *Victory*, R.N. Hospl., Haslar, for training.

ROYAL ARMY MEDICAL CORPS.

Col. C. I. Stockwell is granted the temp. rank of Briga whilst Comdt., Sen. Offrs. Sch., India.

Col. N. J. C. Rutherford, late R.A.M.C., is placed on pay under the provisions of Arts. 139 and 486, Royal War for Pay and Promotion, 1926.

Lt.-Col. B. B. Burke, from the R.A.M.C., to be Col., Col. N. J. C. Rutherford.

Maj. J. S. Wallace to be Lt.-Col., vice Lt.-Col. B. B. Bu promoted.

Maj. J. D. C. Swan, late R.A.M.C. T.A., to be Temp. Capt., d temporarily relinquishes the rank of Maj.
The undermentioned Capts. to be Majs.: J. C. Preston rov.), B. J. Daunt, A. J. Bado (Prov.), and H. M. lexander (Prov.).
Capt. L. Game, late R.A.M.C., to be Temp. Capt., and mporarily relinquishes the rank of Capt.
Lt. (on prob.) J. C. Gilroy resigns his commn.
Capt. J. V. McNally to be Maj. (Prov.).
The appt. of Lt. G. T. L. Archer is antedated to Jan. 26th, 27, but not to carry pay and allowances prior to Jan. 26th, 28.
Temp. Lt. R. Willan relinquishes his commn.

ARMY DENTAL CORPS.

Capt. R. J. Condie to be Maj.

ARMY RESERVE OF OFFICERS.

Lt.-Col. A. L. Scott, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

General List.—Lt.-Col. P. J. Gaffikin to be Bt. Col.
Capt. G. M. Brown, having attained the age limit, relinquishes his commn. and retains his rank.
J. B. S. Guy and H. J. Curran to be Lts.
Col. C. I. Ellis, having attained the limit, retires and retains his rank with permission to wear the prescribed uniform.

INDIAN MEDICAL SERVICE.

Lt.-Col. H. Innes retires.

Correspondence.

"Audi alteram partem."

THE CLASSIFICATION AND DISPOSAL OF MENTAL PATIENTS.

To the Editor of THE LANCET.

SIR,—In the first leading article in your issue of ugust 18th you dealt comprehensively with matters ebated at Cardiff under the heading of the Early reatment of the Psychoses and Psychoneuroses, and eferred to some of the difficulties with which the ubject bristles, reminding us that other powers—arliament or the public—may cast our deliberations o the winds. It appears to me that controversy, nedical and other, hitherto friendly, gathers about ne main question: the classification and disposal f patients. Until now, for purposes of disposal, atients, other than the criminal, insane and mental eficients, have been classified as follows:—

1. Certifiable (whether or not actually under certificates).
2. Non-certifiable.
3. Boarders "desirous of voluntarily submitting to reatment" (Lunacy Act, 1890, S. 229), who are individuals ermitted to live in Licensed Houses and Registered Hospitals for periods varying from the matter of a few days nly to a continuous number of years—e.g., 20 or more. pparently they have no status; although "submitting to reatment" they are not described as patients, and although ving "en pension" they are not treated as "paying guests." he designation of boarder may have been a happy inspiraion arising out of the colloquial term "border-line case." t is about this ill-defined class that a considerable amount f abuse has clustered and out of which many of the comlaints in connexion with the present system of classificaion and disposal have arisen.

t is obvious that Classes 1 and 2 above account for he whole community, except the individual in lass 3 who has no status. The general practitioner s well acquainted with the medico-legal distinction etween Classes 1 and 2, and no one has any power o consign the non-certifiable section of the comunity to asylums.

The new classification suggested by the Royal ommission (Report, Part III.—III., IV., V., VI., p. 157–160) I understand to be as follows:—

The voluntary certifiable patient.
The involuntary " "
The voluntary non-certifiable patient.
The involuntary " "

his suggested fourfold classification is but a variaion of the present one, and, like it, accounts for the hole community, but when it comes to the question f disposal the Commission makes the alarming sugestion that power should be acquired to consign all our of these classes, that is, the whole community, ertifiable and non-certifiable, to mental hospitals, hat is, asylums. And in order to render its alarming ecommendation more workable, the Commission onsiders it advisable to create a new Order and dopt new procedures, whilst incidentally it seeks to ary the present basis or "definition" of legal sanity. Certification, it suggests, should rest on he ability of an individual A (not being a minor) to rite a letter, which in effect would mean, in many cases, the ability of B by means of suggestion, pressure, hypnotism, or threats, to get A to write a letter.

The British Medical Association [1] would vary the present basis for certification but not as the Royal Commission would do so, and whilst suggesting a classification differing somewhat from that of the Commission the Association agrees with its recommendation that powers should be sought for consigning not only the certifiable but also the non-certifiable sections of the community to asylums. I would ask the question: "Whence have we come and whither are we tending?" Is the answer above a reductio ad absurdum or not?

As I pointed out in the discussion at Cardiff on July 27th, to send non-certifiable patients to mental hospitals is not justifiable since it would stigmatise them and their relatives unnecessarily. Since then three cases referred to me by relatives within a week have confirmed my opinion, had it needed confirming, that if the views of the nearest relatives go unheeded we must expect more complaints than there have been in the past. I suggest that the following are the real problems we have to face in relation to legislation:—

1. Can we do away entirely with certification? If not, apart from alterations in the wording of certificates, do we wish to alter the present basis or "definition" for certification, and, if so, can we suggest one more scientific or reasonable than the present medico-legal one? In my opinion those hitherto suggested certainly are not.

2. Do we, for purposes of disposal, wish to recognise a class intermediate between certifiable and non-certifiable, and is there need of establishments where such patients can be sent?

I am, Sir, yours faithfully,
C. A. MORTLOCK-BROWN.

Braunton, N. Devon, August 31st, 1928.

THE LATER RESULTS OF PARTIAL GASTRECTOMY FOR GASTRIC AND DUODENAL ULCER.

To the Editor of THE LANCET.

SIR,—The letters of Dr. A. F. Hurst and Mr. E. R. Flint reveal a difference of opinion upon the value of gastro-enterostomy in the treatment of duodenal ulcer which is a reproach to medicine, and at the same time illustrate the existence of great difficulties and perplexities which beset the investigator of what on the surface would seem to be a very simple issue. Why should two acute observers come to such diametrically opposed views? Obviously because it is usually well-nigh impossible actually, and certainly impossible socially, to perform crucial experiments in medicine in the sense that the physicist does in his own branch of knowledge. For such an experiment there should be one variant only, but in medicine the uncontrollable factors are numerous and some of the significant factors often unknown.

When Dr. Hurst states that gastro-enterostomy is the commonest cause of gastric disorder to-day,

[1] Supp. Brit. Med. Jour., April 28th, 1928, p. 170.

and Mr. Flint that only 10 per cent. ill-results follow the operation, they are both giving a true account of their own experiences, but they are certainly not talking about comparable things. To maintain as much would be nothing less than an intellectual affront to the reader. The controversy over the merits of medicine and surgery in the treatment of gastro-duodenal ulceration has proceeded in this fashion for far too long a period, and, difficult as the subject is, I am convinced it is possible to arrive much more nearly at the essentials of the matter. Collected statistics always suffer from a difference of outlook of the several observers who have, as a rule, dealt with material selected in different ways. There is a common language but no identity of concepts denoted by its terms. For deductions made from massed statistics of very specialised physicians and surgeons should be substituted the judgments of men who have adequate experience of the several methods under investigation.

In the Surgical Unit at St. Mary's Hospital an attempt to evaluate the different surgical methods used in the treatment of ulcer has been made, and my close association with Prof. F. S. Langmead, of the Medical Unit, where a like work on medical methods is being carried out, has enabled me in some way to settle that larger question as to when surgery should be considered at all. I have been criticised adversely for advocating partial duodenectomy for duodenal ulcer in suitable cases, but not one of my critics seems to have treated parallel series of cases, the one with gastro-enterostomy, the other by partial duodenectomy. The time is not ripe yet to make dogmatic statements upon such a question, but I can say that amongst the patients coming under my care the results I get with the larger operation are better than those with gastro-enterostomy. From the section in my book on the dangers of injury to the bile-duct, Mr. Flint has got an impression that I did not mean to convey. I have once only injured the bile-duct in 63 duodenectomies, and the victim is happily well some years after the accident. The danger of the operation can be fairly accurately assessed. Amongst my duodenectomies there have been two deaths, both from lung complications.

Finally, may I state my beliefs about the treatment of gastric ulcer? Surgery is an evanescent phenomenon in the treatment of this disease. Almost certainly the future will provide a method of treatment which will avoid the physiological disturbance which surgery entails and which is so distasteful to the thoughtful surgeon. A very large proportion of cases, even now, are amenable to medical treatment. But there is a residue which only surgery can help, and amongst these a very large majority is restored to health.—I am, Sir, yours faithfully,

CHARLES A. PANNETT.

Pensford-avenue, Kew, August 31st, 1928.

LICENSING IN MIDWIFERY.

To the Editor of THE LANCET.

SIR,—In his "History of British Midwifery," p. 7, Dr. Herbert Spencer thinks it remarkable that, in spite of the clause in the Act 32 Henry VIII., cap. 40, which gave to Fellows of the College of Physicians the right to practise physic "in all and every its members and parts," Dr. Peter Chamberlen, the third, a Fellow of the College, should have been required to obtain a licence to practise midwifery. But that midwifery was not considered by the College to be included in physic is clear from the fact that his father, a barber-surgeon, had been brought before the College, not for practising midwifery, but for prescribing physic, and was warned not to practise medicine. The licence for midwifery was at that time granted by the Bishop of London; it was not until 1783 that the College of Physicians took cognisance of practitioners in midwifery, and instituted a distinct order of Licentiates in Midwifery; the grant of these and other special licences, long previously practised, was abandoned by the College in 1800.

Dr. Peter Chamberlen, the third, although he wa a Fellow of the College, had not obtained the Bishop licence to practise midwifery, and on the petitio to the King, of the midwives over whom Chamberle had endeavoured to assert his self-constituted autho ity, the inquiry was handed over, not to the Colleg but to the Archbishop, who, by virtue of the Act Henry VIII., cap. 11, exercised the episcopal authorit and ordered Chamberlen to apply to the Bishop London for a licence to practise midwifery.

I am, Sir, yours faithfully,

GEORGE C. PEACHEY.

Randolph-crescent, W., Sept. 2nd, 1928.

TOTAL DEATH-RATES, NORTH AND SOUTH

To the Editor of THE LANCET.

SIR,—I have observed with interest, on p. 47 of your last issue, a paragraph drawing attentio to the differences between the total death-rates the North and South of England. Some 20 yea ago [1] I discussed the percentage of the total populatio which survived to 75 and over, in every registratio district of England and Wales, and showed th astonishing differences which existed, as deduce from the Registrar-General's decennial report f 1891 to 1900. Thus, whereas in the Devonshi district of South Molton 27·5 per cent. reached thos ages, in the district of Manchester only 2·2 per cen did so. It at once became apparent that the large survivals were in country districts and the smalle in towns. I considered the fallacies which might b introduced by (1) infant death-rates, and (2) th movement of population from country to town, an concluded as follows:—

1. That there is a very remarkable disparity of longevit in different districts of England and Wales.

2. That this disparity in closely related to density population.

3. That mere movement of population from country t town, whilst probably tending to make the disparity appe greater than it really is, has on the other hand probabl no very considerable effect upon the figures.

I would point out that the differences were by n means a matter of "north" or "south," since som of the worst districts in respect of longevity were i London, and some of the best were in Yorkshir Social conditions seem the most likely chief cause the disparities.—I am, Sir, yours faithfully,

Exeter, Sept. 1st, 1928. W. GORDON.

NEW SOLVENTS FOR SKIN ANTISEPSIS.

To the Editor of THE LANCET.

SIR,—In your last issue (p. 444) Dr. Macdonald an Mr. Peck state that "it is on account of the heav annual cost to hospitals that we have searched for solvent that would replace" rectified spirit. But isopropyl alcohol, the solvent suggested, reall cheaper? The answer to this question depends upo the net cost of rectified spirit. The authors state th to be £2 13*s.* after deduction of rebate. I sugge this figure is inaccurate. Actually the cost per gall after deduction of rebate is 26*s.* Moreover, I fail find a reference in the paper to "The Grant in A in respect of duty paid by voluntary hospitals on spir used in their dispensaries for medicinal purposes which is received from the Government through th Ministry of Health. In 1927 this averaged 16*s.* 4 per gallon of rectified spirit at the London Hospita thus reducing the cost to 9*s.* 8*d.* per gallon. As th authors state that the cost of 70 per cent. isoprop alcohol would be 10*s.* 6*d.* per gallon, it appears th the promise of a saving of 85 per cent. is a drea It is not to be expected that the Chancellor of th Exchequer will continue the grant in aid if the use spirit is abandoned.

I am, Sir, yours faithfully,

F. A. HOCKING,

Sept. 4th, 1928. Pharmaceutist to the London Hospital.

[1] The Distribution of Longevity in England and Wal Brit. Med. Jour., 1909, i., 1344.

Obituary.

ALBERT ARTHUR NAPPER, M.R.C.S. ENG., L.S.A. LOND.

WE regret to announce the death of Dr. A. Arthur apper, which occurred on August 22nd at his resi-ence, Rallywood, Reigate, in the eighty-fourth year his age. Arthur Napper was born in 1845, the n of Dr. Albert Napper, a practitioner at Cranleigh, id a member of one of the oldest Sussex families, band of which had migrated in the eighteenth ntury to Surrey. He received his general education Epsom College, which was founded in 1855, being ie second boy to enter, and proceeded to the medical hool of King's College Hospital, where Sir William ergusson, Dr. Lionel Beale, Sir George Johnson, id Dr. W. A. Guy, the famous toxicologist, were nong the prominent members of the staff. He ialified M.R.C.S. Eng. as soon as he had reached ie age of 21, served as house-surgeon at the hospital, otained the L.S.A. three years later, and joined his ther in the family practice at Cranleigh. This was good practice, and the father was a well-known an in public as well as professional life, who took deep interest in professional problems, writing on ie relation of medicine to the public, on village ospitals, and on rural sanitation. Young Napper as soon associated closely with this side of the work, ecoming medical officer of health of the district, a ost which he continued to hold when his father etired some ten years later. For nearly 50 years Mr. apper practised at Cranleigh, latterly as senior artner in a large firm, and he only retired in advanced ears owing to failing eyesight. His popularity a doctor was earned by skill and clinical accom-ishment, but the wide personal acquaintance which e enjoyed in the district was due also, and largely, his life-long and ardent devotion to field orts.

His association with his old school was a long and ose one. The second boy to enter Epsom College pon its foundation, when he was but 10 years old, is first wife, Elinor Walker, was the sister of Dr. ohn Walker, who was the first entrant to the school. apper was at Epsom for six years as a scholar, was r 45 years a governor, and during most of that eriod a local secretary; he was a member for varying eriods of the finance, works, and school committees, id when he retired from the Council, in 1926, was ected a vice-president.

ALAN ADAIR DIGHTON, L.R.C.P. AND S. EDIN.

THE death occurred at his home near Cheltenham, n August 28th, of Dr. Alan Adair Dighton, a well-nown general practitioner and sportsman in the eighbourhood, and esteemed equally by all classes presented in the large professional connexions. lan Adair Dighton was born in 1861, the son of the ev. C. E. Dighton, Vicar of Maisemore, was educated Clifton and St. George's Hospital, and obtained the cottish double diploma in 1884. After qualification e took a post as resident surgeon at the Cheltenham ranch Dispensary, and from that date for the next years he practised in that city both as medical fficer to various friendly societies and among a large ientele of private patients. For his repute as an bstetrician was high, while many of his male patients ere his personal friends and associated with him his full life as sportsman and especially cricketer. le was deeply interested, also, in the local affairs f Cheltenham, was a town councillor, and a prominent olitical worker in the Conservative cause. After ne war he left Cheltenham for Ross, where he prac-sed for a short time until failing health led to his etirement, but he retained his keen interest in sport, nd was one of the founders of the Ross Race leeting.

FRANCIS EDWARD ATKINSON, M.R.C.S. ENG.

Dr. F. E. Atkinson, who died on Sept. 2nd at Ilkley, had been for nearly half a century medical officer to the combined sanitary authorities of the upland district in the West Riding of Yorkshire known as Craven. He studied medicine at the Yorkshire College, Leeds, where he was Thorp scholar in forensic medicine and hygiene, completing his course at University College, London, from which he took his M.R.C.S. in 1874 and L.R.C.P. in the following year. After holding resident appointments at Leeds General Infirmary and the Bradford Infirmary, he went to live at Settle as medical officer to the Skipton and Sedbergh rural districts, and began to issue the series of annual reports which are the chief monument to his industry and accuracy. In 1884 he traced an epidemic of dysenteric diarrhœa to contaminated water-supply, and 15 years later made a comprehensive survey of typhoid fever at Kildwick. Dr. Atkinson was senior member and a past president of the Yorkshire branch of the Society of Medical Officers of Health, and at the time of his death the oldest medical officer in the North of England.

JAMES ERNEST MOORHOUSE, M.D., C.M.EDIN., B.SC. ST. AND.

THE death occurred on August 17th in Stirling of Dr. J. E. Moorhouse, a well-known practitioner in the town. Born in Yorkshire in 1870, Dr. Moorhouse went to live in Scotland as a boy, and it was at the University of St. Andrews that he took a science degree in 1889, proceeding to Edinburgh to study medicine. He qualified M.B., B.S. in 1892, and held a resident post at the Royal Maternity and Simpson Memorial Hospital, Edinburgh. In 1893 he set up practice in Stirling, where he was appointed surgeon to the Stirling Royal Infirmary, returning to Edinburgh to take his M.D. in 1895. Dr. Moorhouse became popular, and his work increased so rapidly that it soon became necessary to take a partner. He held the posts of medical officer to the Argyll and Sutherland Highlanders' depôt at Stirling Castle and to Stirling Combination Poorhouse. During the war he was attached to the R.A.M.C., taking charge of the wounded in the local military hospital, and since has acted as referee for the Ministry of Pensions. Of recent years professional activities left Dr. Moorhouse little leisure for games, but he was at one time a keen golfer and a skilful chess player. His attractive personality brought him many friends in Stirling, and he will be remembered with deep regret by his patients and colleagues in the town.

UNIVERSITY OF EDINBURGH ANIMAL-BREEDING RESEARCH.—A new building, to cost £30,000, is to be erected to extend the animal-breeding research department, of which Prof. A. E. Crew is the director. Towards the cost of the building and its equipment and the endowment of the chair, the University has received the following contributions: £20,000 from the International Education Board, New York; £16,000 and an annual grant from the Development Commission; £10,000 from Lord Woolavington; and £10,000 from the Empire Marketing Board.

CHARING CROSS HOSPITAL.—The annual report is one of the most satisfactory that has ever been presented. Charing Cross has a lower cost per bed than any metropolitan hospital; the average stay of the 4118 in-patients was 21 days, and the average cost £11 10*s.* 3*d.* There were 25,596 new out-patients, whose average cost was 8*s.* 1*d.* The income of £59,000 (expenses £55,000) included £12,000 paid by patients.

CONTRIBUTORY SCHEME AT FALMOUTH HOSPITAL.—It has been agreed between the governing body and the medical staff that all those contributors to the weekly scheme whose income does not exceed £200 a year shall receive free medical and surgical treatment for themselves and their dependants. Where the income exceeds that amount patients are to make their own arrangements with their medical attendants. Last year out of 4947 "bed-days" 3103 were allocated to members of the contributory scheme.

Medical News.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.—The following scholarships have been awarded during the session 1927–28 :—

St. Dunstan's Medical Exhibition : Miss M. Louden (St. Paul's Girls' School). Isabel Thorne Scholarship : Miss M. Mayeur (St. Paul's Girls' School). Sir Owen Roberts Memorial Scholarship : Miss M. Tate (Retford High School, Notts). Mabel Sharman Crawford Scholarship and Lieutenant Edmund Lewis (R.A.F.) and Lieut. Alan Lewis (R.N.A.S.) Memorial Scholarship : Miss B. F. Goldsmith (L.S.M.W.). School Jubilee Bursary : Miss N. I. Faux (L.S.M.W.). Alfred Langton Scholarship : Miss D. Woodman, M.Sc. (L.S.M.W.). Ellen Walker Bursary : Miss H. B. Burt (L.S.M.W.). Flora Murray Bursary : Miss M. N. Lunn and Miss E. M. Newham (divided). Dr. Edith Pechey Phipson Post-Graduate Scholarship : Dr. Annie Price.

METROPOLITAN ASYLUMS BOARD.—At a meeting of the Board held on Sept. 1st it was announced that the Board of Control had accepted in principle the view that the mental hospitals under the direction of the M.A.B. should henceforward be reserved to meet the needs of London itself. Arrangements will be made for the gradual removal of cases from other counties, so that in any event none of them will be retained after September, 1930.

KING'S COLLEGE HOSPITAL.—The annual dinner of past and present students will be held at 7.30 P.M. at the Trocadero Restaurant, Piccadilly-circus, London, W. 1, on Oct. 3rd. Dr. B. R. Turner will be in the chair. The dinner secretaries are Dr. Ernest Playfair and Dr. H. A. Richards.

GIFTS TO UNIVERSITIES.—Lord Haldane made the following public bequests, all free of Government duties : University of Edinburgh, £1000 ; University of Bristol, £2000 ; Birkbeck College, London, £1000 ; University of Göttingen, £1000 ; British Institute of Adult Education, £2000.

SOCIETY FOR THE STUDY OF INEBRIETY.—A meeting will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Oct. 9th, 1928, at 4 P.M., when Dr. Hubert J. Norman will open a discussion on "Alcohol and Drug Addiction in Relation to Mental Disorders."

ASSOCIATION OF SPECIAL LIBRARIES AND INFORMATION BUREAUX.—The fifth annual conference will be held at New College, Oxford, from Sept. 14th–17th. Among the subjects to be discussed are Existing Types of Indexes to Technical Periodicals, the Librarian as Archivist, Vocational Selection and Guidance, Scientific Abstracts, Information on Accident Prevention, and the Necessity for the Standardisation of Bibliographical Methods.

THE LATE DR. F. P. HUGHES.—Frank Percival Hughes, who died at Bristol following operation on August 23rd, was a Guy's man, who qualified in 1904, taking his London degrees in 1907. He held a series of house appointments at Guy's Hospital, and, deciding to specialise in mental disease, he obtained resident posts at Bethlem Royal Hospital, and then at the Three Counties Asylum. Later he settled at Pinner, where he acted as assistant bacteriologist to the Government lymph establishment at Hendon.

PHARMACOLOGICAL CONGRESS AT HAMBURG.—The eighth annual session of the German Pharmacological Society takes place at Hamburg from Sept. 12th to 15th in the Pharmacological Institute at the Hospital St. Georg. After formal meetings on Wednesday evening, Thursday is given up entirely to a series of papers on the heart and great vessels in honour of William Harvey, Dr. G. V. Anrep (Cambridge) having accepted an invitation to lecture on new investigations into the physiology and pharmacology of the coronary vessels. Other major communications will be made by Prof. G. Liljestrand (Stockholm), A. Jarisch (Innsbruck), H. Straub (Göttingen), and H. Eppinger (Freiburg i/Br.). On Friday the subject of modern industrial poisoning will be introduced by Prof. F. Flury (Würzburg) and H. Zangger (Zürich). On Saturday Prof. G. Barger (Edinburgh) will give an address entitled Old and New about Ergot, to be followed by A. Stoll (Basle). More than 40 separate papers will be read on a wide range of subjects. Excursions will be made in common with other sections of the 90th Congress of the Society of German Naturalists and Doctors which is meeting at the same time. The director of the Congress is Prof. Hermann Wieland, of Heidelberg.

ST. GEORGE'S HOSPITAL.—The annual report fo 1927 lays stress upon the great increase in the cost maintenance which, at £83,000, was more than doub that of 1913, and more than £5000 in excess of the income Unless at least £20,000 a year of additional income obtained it may be necessary greatly to curtail the hospital activities. Last year 5364 in-patients were treated at a cos of £13 12*s.* 4*d.* each for an average stay of nearly 22 days New out-patients numbered nearly 37,000 and cost 7*s.* each

THE LATE DR. J. H. WISEMAN.—James Harr Wiseman, who died at Sheffield on August 23rd, took hi medical studies at Sheffield University and London Hospita qualifying M.R.C.S. in 1917, and straighway entering th R.A.M.C. Special Reserve. He was in partnership wit his father, Dr. Charles Wiseman, and well known in th Crookes and Walkley districts of Sheffield.

ABERDEEN INFIRMARY.—On August 28th th Prince of Wales laid the foundation-stone of the new Roya Infirmary. The buildings will cost £400,000, of which ove £340,000 has been collected in rather less than 18 months On the new site, some two miles from the centre of the city will eventually be massed the Royal Infirmary itself, th Aberdeen Sick Children's Hospital, the Maternity Hospita the Public Health Department, and the University Medica School. The Infirmary will consist of five wings holdin 500 beds, and there will be a large nurses' home. Th adjacent Burnside Home for Mothers is to be enlarged fro 56 to 150 beds, while the Maternity Hospital will hav 70 beds.

THE LATE DR. O. W. B. BROWNING.—Dr. Browning whose career has been cut short at the age of 27 years was a son of the late Dr. Samuel Browning, of Birmingham and a nephew of Dr. J. O. W. Barratt. He qualified fro University College Hospital in 1925, and was a stead worker who was regarded by his teachers as likely to attai distinction. Encephalitis lethargica attacked him whil studying for the London M.B. examination, and after con siderable improvement had given hope of his resuming a active existence, death occurred unexpectedly nearly thre years after the initial attack.

A CANADIAN MEDICAL TOUR.—Some 40 member of the Canadian Tuberculosis Association, accompanied b their President, Dr. J. H. Elliott, and Executive Secretary Dr. R. E. Wodehouse, reached Liverpool last Sunday for study of tuberculosis and its methods of prevention an treatment as practised in this country and on the continen After a visit to Liverpool Cathedral they went on by roa to Birmingham where they received a civic welcome an visited the Yardley-road and Romsley Hill Sanatoria an some of the garden extensions. Their next objectives wer Cardiff, under the ægis of the Welsh National Memoria Association, and Alton Park, Hants, where Sir Henr Gauvain was to show them the pioneer institution for surgica tubercle. On Oct. 16th the party will be entertained i London by their colleagues of the British National Asso ciation for the Prevention of Tuberculosis, and the retur home will be made from Glasgow on Oct. 27th by the Whit Star liner *Calgaric*.

Corrigendum.—In some copies of THE LANCET issue last week a misprint occurred in the brief account of th First International Congress of Oto-Rhino Laryngolog held at Copenhagen. The opinion of Dr. A. Pohlma speaking on "minimal audition," that lengthened bon conduction is apparently not real, was actually *opposed* b clinical observers of the German school present at th Congress.

Medical Diary.

Information to be included in this column should reach u in proper form on Tuesday, and cannot appear if it reache us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUAT MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

TUESDAY, Sept. 11th, and SATURDAY, Sept. 15th.—BETHLE ROYAL HOSPITAL, St. George's Fields, S.E. Pos graduate Course in Psychological Medicine.

ROYAL NORTHERN HOSPITAL, HOLLOWAY-ROAD, N

TUESDAY, Sept. 11th.—3.15 P.M., Mr. A. M. Zamora Antral Infections.

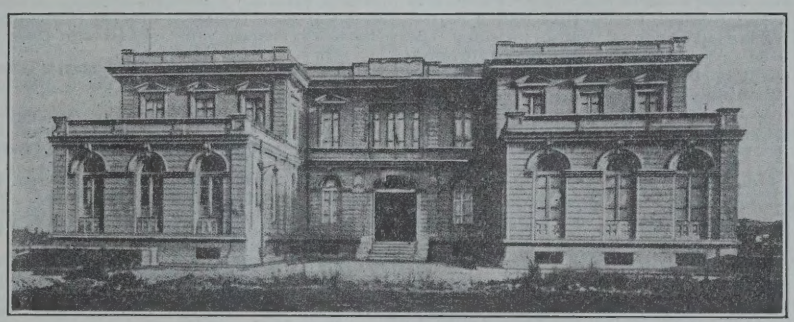
Notes, Comments, and Abstracts.

INSTITUTES OF LEGAL MEDICINE.

In THE LANCET of July 26th we commented on the need r the establishment of a medico-legal institute in London. detailed study of the duties, functions, and responsibilities such institutes in other countries shows that in some of em the centre of medico-legal education is also an integral rt of the machinery of justice, assisting it at all points; some it is merely a department of the biological or patho-gical section of a university, administered as a minor part the activities of the professors of those subjects and oused in odd corners and unwanted rooms. The object this article is to indicate the position that medico-legal stitutes occupy in various civilised countries and the ntribution they make to the national life. The information drawn from the ninth series of the invaluable Rockefeller ochures on Methods and Problems of Medical Education, hich contains nearly thirty articles describing as many edico-legal foundations throughout the world.

Their Origin and Functions.

As a general rule, medico-legal institutes originate either annexes to the public morgue or as departments of the athological section of a university. In America they are ually an accre-on round the fice of the medi-al examiner, an ficial peculiar, or most so, to the ew World, who responsible for he investigation f all suspicious eaths. The nctions of a edico-legal insti-ite are extremely ide, for, in ad-ition to the post-ortem work hich forms so rge a part of its bligations, it in-estigates speci-ens of all kinds -human delicta, -for the police, examines living persons for injury e disease, provides experts to assist courts of law, studies he psychology of criminals and others, builds museums of pecimens and photographs, and teaches legal medicine to edical graduates and undergraduates, lawyers, and public fficers. The head of the institute is often, as in America, public officer himself, and, as in many countries, professor f forensic medicine at the local university. Since the cope of the work includes every branch of medicine, from natomy and physiology to biochemistry and psychiatry, is obvious that a medico-legal expert must be extremely ersatile. In addition to all these routine duties the staff ust, if it is to maintain a live and creative institution, evote itself to research and the recording of its results in apers and books.



Institute of Legal Medicine at Rome.

It is strange that by far the most highly evolved medico-gal system in existence should be that of a relatively ncivilised country—Egypt. The vital need for protection gainst as large and as ruthless a criminal population as ny in the world, together with the genius of one or two nglishmen, has made the Medico-Legal Institute in Cairo n essential part of the organisation for the investigation of rime. It is made use of daily, quite apart from medical or hemical considerations, and practically no case of import-nce occurs in which it is not consulted. All cases of sudden eath, accident, sexual assault, and serious injury occurring n Cairo are examined at the mortuary or head office, and ll cases of poisoning throughout the country, all specimens or examination, all claims for compensation after injury, ermanent infirmities, and appeals against the decision of ther medical officers are referred to the Institute. Experts re sent to the provinces on demand, but the Institute is n touch with the provincial medical officers of the Depart-ient of Public Health, who are consulted in all minor cases f crime. Few persons in Egypt know their own age, and he Institute has to apply special methods, including X ray xamination of the epiphyses, for estimating the age of oung offenders, girls who have been the victims of rape, rostitutes who apply for licence, and others. Its technique or identifying bullets and cartridge-cases is exceptionally ne. The principal medico-legal expert is also the professor f legal medicine in the University; the course of instruction takes six months, and the examinations form part of the final test for medical qualification. The standard is higher than in most European countries, as a great part of the work of a provincial general practitioner is medico-legal. The mortuary is situated in the School of Medicine, and daily compulsory demonstrations of cases of accident, murder, and suicide are given.

Medico-Legal Institutes of Europe.

Europe is well provided with medico-legal institutes. Vienna had a chair of legal medicine in 1804, and Hungary, which boasts of being a nation of lawyers, claims that its universities have taught legal medicine as a compulsory subject for several centuries. Not only the capitals, but other large towns as well in Austria, Hungary, Poland, and Roumania have medico-legal institutes housed in separate buildings with the most modern equipment, and engaged in active coöperation with the forces of law.

Italy is making great strides towards the realisation of the most modern medico-legal ideas, and the new Institute at the Royal University of Rome, which is almost the last word in convenience and completeness, might serve as a model for all such foundations. The public morgue is in the basement of the building; the left wing contains refrigerator cells, identification and dressing rooms, rooms for autopsy, photography, and the magistrates' investigation. The museum, corpse elevator, maceration room, service room, and heating apparatus are in the centre block, and in the right wing are the rooms for the animals' and their custodians' quarters, animal autopsy, and experimental laboratory. On the ground level are two large lecture rooms, each served by an elevator, one fitted for microscopic demonstration, and one for autopsy; a chemical and microscopical laboratory, examination rooms, and accommodation for the medical staff and visitors. On the first floor are laboratories for chemistry, bacteriology, and histology; psychology and anthropology rooms, a library, the director's room, and the professor's own laboratory.

Many quite small countries have large up-to-date institutes. That at Lisbon, which is just nearing completion, rivals all but the finest European ones; Roumania has an autonomous institute conducted on original lines by the versatile Prof. Mina Minovici, and Cuba is building one with first-class equipment combined with a morgue. Havana is the world's paradise of medical jurists, for the judiciary system includes a corps of 20 doctors of legal medicine who attend all courts and give evidence on all matters in which medical knowledge is material, who examine all persons who have met with violence, perform all legal autopsies, and visit wounded men every five days to inspect their condition and treatment. In 95 per cent. of trials, according to Drs. Raimundo de Castro and Antonio Barreras, the judgment goes according to the medical evidence.

The Position in England.

This excellent collection of the Rockefeller Foundation shows that the medico-legal institute is a feature of most civilised States, even the smallest, and that this country is in this respect seriously behind its neighbours. We have the best judicial system in the world, and allow practically no place in it to medicine. Glasgow and Edinburgh, thanks to the Scottish legal system, have departments of forensic medicine of which the directors are also "casualty surgeons" of the city, and to that extent in touch with the administration of law, but in England, where law and medicine stand individually as high as anywhere in the world, there is no recognition of any link between them. Autopsies are done by local police surgeons or by practitioners called in by the coroner; these officers have no specialised training to approach that of their continental colleagues, and their results are, as far as collective usefulness goes, buried with the corpse. The amount of scientific material that goes to waste from our courts for want of a centre in which to collect and use it is depressingly great. A few gifted individuals have acquired great knowledge of the subject, and they expound it to students for a few hours knowing that in all probability no medico-legal questions will be set in the examination. Consequently, the average standard of

knowledge of legal medicine among medical men is not as high as it should be. Yet the science of medicine touches the administration of law at many points. If a crime of violence is committed, an examination of wound or weapon often yields indispensable evidence. If human remains are found, the identity of the corpse, the cause of death, and the circumstances surrounding it are often questions only answerable by a medical man. The insurance office calls medical aid to the making of its contracts with its clients; the probate court is often guided by the advice of the alienist in its disposal of disputed wills. The development of legal medicine is thus extremely helpful, if not indispensable, to the administration of justice, and we can think of no better way of promoting it than the establishment in London of a medico-legal institute.

THE PREVENTION OF DROWNING.

FROM a statement just issued by the life-saving service of the American Red Cross we learn that between 6000 and 8000 persons are drowned each year in the United States. Mr. H. F. Enlows, who directs this service, claims that 80 per cent. of these fatalities are preventable. Many drowning accidents, he says, occur within a comparatively short distance of safety, few of them happen in mid-stream or far out from shore. Lives are lost through people losing their heads. If they find themselves out of their depth unexpectedly for the first time, they become so panic-stricken that they are unable to save themselves. Therefore the Red Cross beginner's test arranges for this class of swimmer to jump into water that is over their heads and swim for safety. Having learned to do this under supervision, they are safeguarded against panic. Under the ægis of the American Red Cross more than 168,000 swimmers have already been taught life-saving methods. During June of this year 14 training schools in various part of the country gave a 10-day intensive course in life-saving to nearly 1000 swimmers. Upwards of 5000 examiners and a special corps of 24 travelling instructors are now at work throughout the country. During the summer season special demonstrations are given at hundreds of resorts. During the winter the campaign is carried on at in-door swimming pools, with special attention to those of the universities and colleges.

RATS AND RED SQUILL.

REFERENCE was recently made to the efficacy of red squill in the destruction of rodents without endangering the lives of other animals, and our attention has been drawn to a leaflet issued by the Rural Information Bureau of Sidmouth, in which it is remarked that although Government and municipal authorities obviously cannot recommend anything of a proprietary nature, no matter how efficient such may be, it is an open secret that the ideal form of red squill is available under the registered name of Nomorats. The one-pint tin of this preparation at 7*s.* 6*d.* net is sufficient for about 400 baits, and special rates can be quoted for large consumers. We can testify to its efficacy from actual experience. Nomorats is distributed by Messrs. Abol, Ltd., of Paddock Wood.

Appointments.

SLOAN, ALLEN THOMSON, M.B., Ch.B. Edin., has been appointed Medical Officer of Edinburgh Prison.

Surgeons under the Factory and Workshop Acts: CAITHNESS. H. P., M.D. Edin., D.P.H. (Linlithgow District of the County of West Lothian); AINSCOW, A. E., M.B., Ch.B.Vict. (Melbourne District of the County of Derby).

Manchestsr Royal Infirmary. Resident Appointments: SHEPPARD, R. F., M.B., Ch.B.; LONGWORTH, J. A., M.B., Ch.B.; WILKINSON, J. F., M.B., Ch.B.; HARDMAN, G. B., M.B., Ch.B., House Physicians. FLOYD, R. B., M.R.C.S.; OSBORNE, R. P., M.B., Ch.B.; NOWELL, S., M.B., Ch.B.; TICKLE, H., M.B., Ch.B.; ROWLEY, S. L., M.B., Ch.B.; HUGHES, I. M., M.R.C.S., House Surgeons. REEKIE, Miss M., M.B., Ch.B., Junior Assistant House Surgeon (Central Branch). BEAL, J. R., M.D., Clinical Parhologist. Non-resident Appointments: CLEGG, S. F., M.B., Ch.B., Surgical Registrar (Second). RIDEHALGH, Miss N., M.B., Ch.B.; DAVIES, Miss M. G., M.B., Ch.B. Clinical Assistants (Surgical). BODOANO, Miss A., M.B., Ch.B.; HERBERT, Miss A., M.B., Ch.B., Clinical Pathologists.

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital, 49–55, Vauxhall Bridge-road, S.W.—H.S. At rate of £150.

Albert Dock Hospital, Connaught-road, E.—Res. Med. O. At rate of £110.

Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150.

Birmingham City.—Asst. M.O. £750.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110.

Blackburn Union Institution and Infirmary.—Res. Asst. M.O. £200.

Brighton Education Committee.—Asst. Sch. M.O. £600.

Cheltenham Borough.—M.O.H. and Sch. M.O. £850.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow.—Assist. M.O. £250.

Connaught Hospital, Walthamstow, E.—Sen. Res. H.S. at rate of £150. Also Jun. Res. H.S. and Res. H.P. Each at rate of £100.

Denbigh (near), North Wales Sanatorium.—Male Asst. Res. M.O. At rate of £200.

Derby, Derbyshire County Council.—Tuberculosis Officer. £75

Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S. Each at rate of £110.

Exeter, Wonford House.—Deputy Medical Supt.

Gloucester, Gloucestershire Royal Infirmary, &c.—Second H. At rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—H. Also H.P. Each at rate of £50. Also Part-Time Ju Cas. O. At rate of £75.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £100.

London Lock Hosp., 91, Dean-st., W.—H.S. At rate of £200.

Manchester, Ancoats Hospital.—H.S. At rate of £100.

Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Re M.O. At rate of £125.

Manchester Ear Hospital, Grosvenor-square, All Saints.—Tv H.S.'s. At rate of £150 and £120.

Manchester, Maternity and Child Welfare Centres.—M.O. £60

Miller General Hospital for South-East London, Greenwich-roa S.E.—Pathologist. £600. Also H.P. At rate of £125.

National Hospital, Queen-square, W.C.—Asst. P.

Newcastle-upon-Tyne, University of Durham, College of Medici Asst. Bacteriologist. £500–£600.

Northampton General Hospital.—H.P., H.S., and two Asst. H.S. Each at rate of £150.

Orkney, Island of North Ronaldshay.—Medical Practitioner. £40

Patna Medical College.—Prof. of Physiology. Rupees 1200.

Plymouth, Homœopathic and General Hospital.—H.S. At rate £100.

Portsmouth, St. Mary's Infirmary, Institution, &c.—Seco Asst. Res. M.O. Also Third Res. M.O. £300 and £2 respectively.

Queen's Hospital for Children, Hackney-road, E.—H.P. A Cas. O. Each at rate of £100.

Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M. At rate of £250.

Richmond, Surrey, Royal Hospital.—Sen. H.S. At rate of £1

Royal Northern Hospital, Holloway, N.—Res. M.O. £2 Also H.P. and Obstetric H.S. Each at rate of £70.

Royal Waterloo Hospital for Children and Women, Waterloo-ro S.E.—Cas. O. £150.

St. Mary's Hospital, W.—Asst. Pathological Chemist. £300.

Salisbury General Infirmary.—H.S. £150.

South Shields, Ingham Infirmary.—Jun. H.S. £150.

Talgarth, near Brecon, South Wales Sanatorium, &c.—As Res. M.O. £200.

Truro, Royal Cornwall Infirmary.—H.S. £170.

University of London, S. Kensington, S.W.—William Jul Mickle Fellowship. £200.

West London Hospital, Hammersmith-road, W.—H.P. and t H.S.'s. Each at rate of £100.

Weston-super-Mare Hospital.—Res. M.O. £130.

Wolverhampton, Wolverhampton and Staffordshire Hospital. Res. Anæsthetist. At rate of £100.

Worksop, Victoria Hospital.—H.S. At rate of £170.

The Chief Inspector of Factories announces vacant appointme for Certifying Factory Surgeons at Corris (Merionethshi and Sandwich (Kent).

Births, Marriages, and Death

BIRTHS.

CAIRD.—On August 24th, at Glastonbury, wife of Karl F. Cai M.B., of a son.

JOHNSTON.—On August 26th, at Forest-road, Birkenhead, Mary Murray Johnston, M.B., Ch.B., D.P.H. (née Jac wife of F. B. Johnston, M.A., of a son.

LEON.—On August 30th, at Clarence Gate-gardens, the wife Kenneth Leon, M.R.C.S. Eng., of a daughter.

MAYBURY.—On August 10th, at Siota, Gela, British Solo Islands, the wife of Lysander Montague Maybur , M. M.B., of a son.

DEATHS.

ATKINSON.—On Sept. 2nd, at Ilkley, Francis Edward Atkins M.R.C.S., L.R.C.P., of Bowerley, Settle, medical officer health, Craven Combined District.

BROWNING.—On August 28th, 1928, O. W. B. Browni M.R.C.S., L.R.C.P., of Birmingham, aged 27 years.

HAWKE.—On August 31st, suddenly, of heart failure, Edw Drummond Hay Hawke, M.R.C.S., of Shortlands, Ken

MORGAN.—On August 26th, at a nursing home in Newcas George Frederic Elliot Morgan, M.R.C.S., of West Hartlep aged 64 years.

NEWELL.—On August 30th, at Moville, Co. Donegal, Ed G. Newell, M.D. Dub.

NICHOLLS.—On Sept. 1st, at a nursing home, Francis J Nicholls, M.B., B.Ch. Camb., of Eastbourne, aged 58 ye

OSLER.—On August 31st, at Norham-gardens, Oxford, Gr Revere Osler, wife of the late Sir William Osler, Bart.

PRITCHARD.—On August 31st, at a nursing home in Lond after an operation, Owen Pritchard, M.D. Brux., Gloucester-square, aged 74 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

An Address

[ABRIDGED]

ON THE

ELATION OF PHYSIOLOGY TO OTHER SCIENCES.

ered before the Section of Physiology of the British Association at Glasgow on Sept. 11th

BY PROF. C. LOVATT EVANS, F.R.S.,
PRESIDENT OF THE SECTION.

FTER reviewing the close association between siology and clinical medicine and their mutual , Prof. Lovatt Evans deplored the regrettable ngement between the two subjects which arose he latter part of last century, when physiologists concerned with matters such as nerve-muscle siology, which appeared to be chiefly of academic est. At the present day it was admitted that knowledge then gathered has proved of great e in directing physiological inquiry along scientific , from which the science of medicine has profited uch as physiology itself. The interesting revival he study of the same subjects by more accurate hods within the past few years had further ched our insight into the fundamental phenomena fe and vindicated the opinions of our predecessors o the value of such investigations. The develop- t of physiological chemistry, largely due to the ience of Prof. W. D. Halliburton, and of such nces as neurology, histology, embryology, organic nistry, physical chemistry, experimental physi- y, and pharmacology was the great dilemma of medical curriculum. Prof. Lovatt Evans con- ed :—]

he solution to the difficulty lies, in my opinion, wo directions : first in the extensive modification he present system of examinations, and secondly he exercise of a sympathetic understanding on part of specialist teachers of the difficulties of student and a proper perspective of the relation his own subject to the requirements of the iculum as a whole.

UTILISATION OF PHYSIOLOGICAL METHODS IN CLINICAL MEDICINE.

is, in my opinion, quite impossible, and perhaps esirable, at the present time to frame instruction hysiology so as adequately to equip the ordinary lical student to proceed directly to the prosecution esearch in any of its branches ; this can only be ieved by a further year or two of study of the ject, such as by a science course for an honours ree. One of the objects of instruction is to ble the latest results of physiological investigation be utilised in the clinic, and it seems to me that of the best ways for this to be effected is for some kers specially trained in physiological methods nter the staff of clinical units where facilities for arch work are at hand. The opinion was at time prevalent among many clinicians that if ir problems required the use of methods similar those of experimental physiology these should farmed out to a physiologist, and although there cases where this procedure may be followed with antage, the rich harvest which has already been ped by the importation of physiological knowledge methods into, rather than the export of problems n, the clinic, is adequate justification for the ner. It is in any case encouraging to note the sent-day decline of the attitude that experimental estigation is work of a lower order, which can be out like so much washing, for the employment of inferior caste. We at the present day, however may be labelled, are not merely willing to admit, eager to assert, that we cannot recognise funda-

mentally distinct methods of physiology, of psychology, of medicine, of chemistry, or of physics ; we only admit a method of experimental inquiry common to all science and slightly modified to suit particular cases.

THE APPLICATION OF MATHEMATICS TO PHYSIOLOGICAL PROBLEMS.

[In discussing the scientific aspects of physiology, the lecturer advocated mathematics as one of the collateral subjects of study which might be chosen by the young physiologist, for the following reasons :—]

The qualitative observations of one generation tend to become quantitative at a later stage of development of a science, and the degree of development of a science can indeed to some extent be judged by the extent to which it falls into a scheme of the unity of science by giving results which are capable of mathematical treatment and of expression in broad general principles. Mathematics and mathematical physics have been of considerable use to physiology in increasing the accuracy of its experimental data, and this in two ways. First, by bringing the accurate experimental and intellectual methods of physics to bear on the construction and use of the numerous physical instruments which it employs. It has been said by Prof. A. V. Hill that many of the early investigations on muscle were in reality studies of the properties of levers, and it is certain that similar remarks apply to only too many investigations in which the properties of the apparatus used have not been suitably investigated. As illustrations of the value of mathematical-physical study of apparatus one may mention the classical investigations of Frank on hæmodynamical recording apparatus, the fundamental treatment of string galvanometers and similar instruments by Einthoven, the correction of capillary electrometer records by Keith Lucas, and the vast improvements in galvanometer systems effected by Downing and Hill.

Even when the apparatus at the disposal of the physiologist is unexceptionable, however, it is often the fact that, owing to the nature of the subject, results are not susceptible of repetition with the same ease and certainty as are those of chemical or physical experiments. The variability of the results is due in such cases to what are called accidental circumstances, a term which in reality means circumstances over which we have no control, owing either to our ignorance of their nature, or else to our inability to alter them. In those cases where further study provides methods of more fully understanding and therefore more adequately controlling these circumstances, valuable results follow almost at once. For instance, certain of the obscure causes of different behaviour under particular conditions are inborn, and can be controlled by the use of inbred strains of animals such as those of the standard inbred white rats ; or again, one may mention the far-reaching results of the observation by Pavlov that the utmost care must be exercised when studying the conditioned reflexes to exclude all stimuli, however trivial they may appear, except the one under consideration.

Under the most favourable conditions, however, it has up to the present been usual to find a considerable unavoidable margin of variation in the results of many physiological experiments. By regarding these provisionally as " chance " variations, considerable help may be obtained by the application of the theory of errors, based on the theory of probability. In reality this is an empirical method, of which Poincaré has said that " everybody firmly believes in it, because mathematicians imagine that it is a fact of obervation, and observers that it is a theorem of mathematics," but nevertheless, although it cannot, as seems sometimes to be assumed, be used to replace accurate observation, it does enable a result to be brought out which might otherwise be obscured by small variations beyond our control. Research by such statistical methods provides a

useful method of investigation, as, for instance, in the study of the toxic or other action of drugs, the data of the œstrus cycle, &c. An elementary deduction which can be drawn from the consideration of these facts is that, where only a few experiments of any kind are performed, important conclusions cannot be drawn unless it can be shown that the conditions are so controlled, and the accuracy of the actual observations so high that the sum of the individual "chance" variations must be small. Observation of this precaution would, in my opinion, reduce the bulk of contemporary physiological literature very materially, with a corresponding improvement in its quality.

Lastly, as a means for evolving generalisations out of experimental data, and of bringing these into relation with the generalisations of other branches of science, the use of mathematics is incontestable. One need only mention as examples the fresh outlook which has been provided for further investigation by the exact study of the data relative to the segregation and recombination of hereditary factors, the beautiful investigations of L. J. Henderson on the equilibria in the blood, the theoretical study of the phenomena of excitation, the employment of thermodynamics, and the numerous other applications of physico-chemical theory.

[Prof. Lovatt Evans then commented on the reunion between physiology and chemistry, which had given rise to the science of biochemistry, and briefly outlined the relations of physiology to zoology, botany, anatomy, and psychology. From his concluding section on the philosophical position we select a few stimulating paragraphs:—]

Philosophical Considerations.

Although the application of those sciences which are called "exact" is of immense value to physiology, we must be under no misapprehension as to their real relation, which is merely that they enable the phenomena of life to be described more accurately. They in no way furnish an explanation of those phenomena or enable us, without direct reference to physiological facts, to forecast them. The so-called exact sciences appear to be so because of the simplifications of which they are capable, by reason of which problems can readily be formulated and attacked. Disturbing conditions can provisionally be ignored or allowed for, and a first approximation reached which can be corrected later. In biology this can less readily be done. It is the failure to appreciate this elementary fact which leads some of those trained only in the methods of the exact sciences into the most palpable and unpardonable blunders when they attack biological problems. To take a simple illustration, no amount of pure physics, chemistry, and mathematics would have enabled the intricate and beautiful physico-chemical adaptations which have been shown by L. J. Henderson to happen in blood, to have been predicted, because these adaptations depend, among other things, on the presence of membranes round the red cells, fashioned by the living cells and having properties incapable of prediction. The investigation of the equilibria themselves, in their physiological significance, was a necessary preliminary to the introduction of physico-chemical theory. When these phenomena, and deductions from them, became known, it was possible for the physical chemist to step in, apply the appropriate theories, and thus enable the phenomena to be more accurately described in his own language.

But the fact remains that this description turns entirely on the postulated physico-chemical properties of the membranes as deduced from their actual behaviour under given conditions in what are in reality physiological experiments. It brings us no nearer to an explanation, perhaps, but it certainly does enable us to link up some of the phenomena of life with phenomena in the non-living, and so to scribe them in terms which we think we understand tter, because for some reason we regard physics d chemistry as more fundamental sciences than biology. Whether they are really more ex however, is a point which might be debated.

The process of application of the exact scie to physiology consists in reality of studying phenomena themselves and then adopting the r plausible explanation capable of formulation in te of the exact science. There is no other way. let us be under no illusion about finding final expl tions of what life is by this or any other method

Physiologists, in attempting to know what is, have in my opinion attempted too much, I think that a new standpoint is essential. of the greatest of contemporary thinkers, L Henderson, has recently submitted an argun with which I venture humbly to agree. The ide adaptation, urged by Claude Bernard, should adopted by physiology as its basal principle, as chemist accepts the conservation of matter or physicist the conservation of energy. We need seek to know why it is so: that is the province of philosopher; all our experience tells us that it is It is not a definition of what life is, but a brief st ment of its way, which is valuable, stimulating, true. But we must treat the organism and environment as one if we are to gain a proper ins into the adaptations manifested by the former. is conserved by adaptation, and I venture to t that this conception will be useful alike to ger biology, to physiology, and perhaps most of al pathology. For there is no fact in biology, pathol or therapeutics which may not profitably be vie from this fundamental physiological standpoint.

The Trend of Modern Physiology.

In many ways a great future lies before physiol Utilising the other sciences as its tools and i reacting powerfully on them, we can confide predict progress to undreamt-of heights, an enorn development of experimental pathology and medi and far-reaching effects on economic and sociolo conditions. Yet, implicit in these very potentiali there is another and a gloomier side to the pict The rapidly accumulating wealth of detailed kn ledge and of special technique demands an incre specialisation; unless there is a periodic intelle stocktaking there must inevitably be a loss of pers tive and of grasp of great general principles. how can this stocktaking be done? Can team v ever reach that harmony of action which distingui the individual? Any scientific subject is cap of indefinite expansion, and with the biolo sciences it is hard to foresee what the ultimate of *mere* expansion can be. How will scien literature develop? Will there have to be abstr of abstract journals and reviews of reviews? the subdivision of the subject necessitate in the run the creation of lectureships or professors to deal, for example, with the special phy chemistry of heterogeneous equilibria in biolo systems, with intermediary metabolism, with problems of hæmodynamics, or growth, or re duction? If so, how will the results of their sp investigations be brought to common ground i great unifying principles come to light? Can expect that such unifying principles will app if they do not, will the progress of science be bro to an end by the accumulation of its own produ

The establishment of special research professors however profitable in isolated cases, cannot in opinion make good this growing specialisation, bec it will tend to divorce research and teaching and p the teaching professor on a level of real or appa inferiority. The idolisation of research for the of the advancement it brings is another of the dan which threaten us. If there is one thing worse "a mediocrity who does no research" it is mediocrity who does." There are at the pre time a large number of junior research posts avail but not enough well-trained people adequatel fill them. This is all to the good provided that t who on trial show no aptitude for the work ca

lessly eliminated. As they often cannot, there are onsequence a number of young people who drift one research scholarship to another, perhaps aimlessly, but with no better objective than the ufacture of papers designed to justify their loyment. The hapless editors of each of the ling tide of journals are coaxed, hoodwinked and, cessary, bullied, to ensure that these papers see light of day. In the fullness of time the list of t-time research posts is exhausted, and the young stigator must now either turn to some entirely rent occupation or else, as one of my friends essed it, "subside into a professorial chair" which, incidentally, he is probably entirely ted. The pursuit of science is nowadays, perhaps rtunately, a career, and one in which moreover ays to advertise. Science, we are often told, e cream of civilisation. If we believe this let us all our endeavours to ensure that it be not a ped cream, specious, puffed up with wind, and enting a fictitious appearance of solidity.

Lettsomian Lectures

ON

RHEUMATIC HEART DISEASE IN CHILDHOOD.

Delivered before the Medical Society of London

F. JOHN POYNTON, M.D., F.R.C.P. LOND.,

PHYSICIAN TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET; PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL.

LECTURE I.

Delivered on Feb. 20th, 1928.

these three lectures I shall pursue three particular nes. The first is the correlation of the patho- al lesions of the heart with other rheumatic ms; the second the clinical manifestations of matic heart disease; the third the treatment of heart disease. This lecture deals with the first ne, and the pathological lesions will be considered er two headings: (1) Those in the connective ue skeleton. (2) Those in the "noble" tissues— example, the heart muscle and nervous tissues.

here is general agreement that acute rheumatism ue result of an infection and that this infection is endent upon various predisposing causes. These, ever, are not generally agreed upon and are in ess of careful investigation. In accordance with own conviction, I shall assume the infection to a diplococcus of the streptococcal group, though dmit that medical opinion generally inclines to view that the cause is not yet known, and I gnise that the next great scientific move must be her extensive research in this direction.

The Lesions of the Connective Tissue Skeleton.

he earliest lesions in the myocardium, as shown histological sections demonstrated before the al Medico-chirurgical Society in 1899, are scattered of cellular infiltration and the appearance of ti-nucleated cells between the muscular fibres. se are, in my opinion, the antecedents of the hoff nodule.

schoff's nodule has been the basis of extensive world-wide research, in this country particularly Dr. Carey Coombs, who says: "The submiliary ules in myocardial rheumatism consist of rounded fusiform areas formed by large spindle-shaped lying in the intermuscular trabeculæ of connective ue." The average length he would estimate as ewhat less than 400 ft. "The special cells," says, "are much larger than the fibroblasts of nary inflammatory reactions, to which in other respects they closely approximate. They are multi-nucleated, the chromatin substance of the nuclei in most cases appearing as a sharply defined margin with a small central mass or masses; the rest of the nucleus takes no stain and thus gives the cell a vacuolated appearance. They are surrounded by plasma cells and leucocytes, chiefly of the mono-nuclear variety. The nodules frequently arise in connexion with an arteriole, either around it or even in the wall itself, and their eventual fate appears to be cloudy swelling or cicatrisation." My view is that these nodules are the first signs of healing in a rheumatic lesion, and that they are probably evidence of a streptococcal infection, but that their absence from the lesions of a fatal acute rheumatism is no proof that the condition is not rheumatic.

When there is a severe infection the changes in the connective tissues, be it subcutaneous nodule, pericardium, cardiac valve, or synovial membrane, are all built on the same plan. The subcutaneous nodule is the best illustration, because it affords a complete example on a small scale. In the centre of the infected area there is necrosis, in the adjoining zone leucocytic infiltration and cell proliferation, in the outer zone vascular dilatation and swollen and often gelatinous-looking connective tissue fibres. Identical nodules were demonstrated by Sir Thomas Barlow in the pericardium and endocardium more than 40 years ago, and in the original paper on the rheumatic nodule, published in 1881, Warner and Barlow said: "Such nodules belong strictly to the fibrous tissues, and in nature are probably homologous with the inflammatory exudation which forms the basis of a vegetation on a cardiac valve." The results of the healing of these lesions are also clear; the necrotic tissue must be replaced by scar tissue, which in the nodules is negligible, but which in the pericardium may lead to adhesion or to great thickening of the layers, and in the valves to deformity.

The Necrotic Areas in Rheumatic Lesions.

The point on which to focus attention now and in the future must be the degree of perfection of the healing of the necrotic areas in the connective tissue skeleton. This is very difficult while the nature of the infective agent remains doubtful, and will continue difficult even should it prove to be streptococcal.

All my investigations with Dr. A. Paine, into the morbid anatomy, suggested that the infective agent would most probably be found where the zone of cell exudation merges into the dead tissue, for just at this point the infection has killed the resistance of the cells, but has not become, as it were, buried in the necrosis that it has produced. We need to know the frequency, duration, and extent of these unhealed lesions, especially in the connective tissue of the heart. We want, still more, to know whether they contain the infective agent in some form or another. I purposely say "in some form or another," because if the infection is unknown it may, when discovered, be found to assume some resting phase in such areas. Dr. Paine and I showed, at a pathological meeting of this society in 1911, that the diplo-streptococcus could be converted, by alterations in media in vitro, into very long chains or into a micrococcus indistinguishable in appearance from a staphylococcus. If a section of a gross streptococcal endocarditis is made in a region where there has been an effort at healing, we find the micrococci toward the healing area staining red, not blue, with methylene-blue, and later still becoming unstained refractile specks in the light blue fluffy necrotic tissue. The question is: are they then dead? If we watch a culture growing on such a medium as milk under the highest magnification we see, first, minute refractile dots, then blue-staining micrococci, then the fully developed diplo-streptococcus. If the infection is streptococcal these areas of necrosis are weak links in our knowledge of the morbid anatomy. Though I may seem to be dwelling upon recondite details, I am really only echoing the difficulties of the clinician who asks: When is an attack of rheumatism cured? How can

I ascertain this? What is the importance of unexplained fever in acute rheumatism? When we look at these questions from the aspect of morbid anatomy we can well understand how much further investigation is required to answer them, and how much our difficulties are increased by the great rarity of fatal rheumatic heart disease in the very earliest phases of the illness in man.

Some light is thrown, however, upon the destruction of the rheumatic infection by experiment and by some observations made by Dr. Paine and myself in 1911 upon experimental appendicitis in young rabbits; and in 1912 upon acute appendicitis in man associated with follicular tonsillitis. The same streptococcus was isolated from the tonsils and the appendix, and produced a series of cases of multiple arthritis and appendicitis in rabbits. The advantages of these investigations were that the animals could be killed in the early stage of illness and that the human appendix was in an early phase of acute infection. We hardly ever obtain such a lesion as rheumatic endocarditis at this early stage.

Possibly the rapid recovery of arthritic, compared with cardiac lesions, is due to the extreme vascularity of the synovial membranes and the profuse leucocytic reaction in them, combined with our ability to keep joints at rest. The cardiac valves are under great disadvantage, but a mitral valve which has been slightly damaged by a row of marginal vegetations will, in course of time, heal with slight thickening only; this in turn may smooth down and become of no functional importance, as clinical experience has amply demonstrated.

Every investigator of acute rheumatism must be struck by its general resemblance to tuberculosis, and I would compare the acute phases of the two infections.

Chronic Rheumatic Infection: Mitral Stenosis.

I now come to another type of lesion in which the invasion of the connective tissue skeleton is subacute and distinguished by a slow process of fibrosis. This type we all know too well as the cause of what is probably the most serious form of organic heart disease: mitral stenosis. Our efforts to ameliorate rheumatic heart disease must depend to a considerable extent upon a better understanding of the life history of this type of rheumatic infection.

At the onset we are met by two puzzling problems. Why is this type so much more frequent in the female? and does the process of fibrosis depend entirely upon the infective agent or is there also some tendency in the individual tissues to react in this fashion? This second question is of great clinical importance and may be put in another form: does a severe mitral stenosis result from a single prolonged attack of rheumatism, or does it more frequently result from repeated and often unrecognised reinfection or recrudescence? The brutal attacks and the gross injuries of infective processes in human beings we comprehend, but it is the quiet, stealthy movements of infection that are so baffling and so likely to lead to wild theories and sometimes equally wild methods of treatment. The chorda tendineæ of the mitral valve of a rabbit is but a mere thread of connective tissue, yet by intravenous inoculation we can demonstrate that the infection fastens upon one segment of this slender cord.

In one little girl who died of rheumatic myocarditis in a first attack, I traced at the bedside, in the short period of five months, the development of the physical signs of mitral stenosis in a valve at first apparently healthy. The cusps after death were greatly thickened throughout, but showed no projecting marginal vegetations. The sections showed a condition identical with that found in a rheumatic nodule.

Dr. Carey Coombs, in his valuable monograph upon rheumatic heart disease, gives excellent illustrations of similar changes in the musculi papillares. Such extreme damage to the cusps of a valve as occurred in the small child might well, if she had survived and had no further attack, have caused sufficient contraction to produce a grave stenosis. There however, many cases in which one suspects obsti recurrent infection as a more probable cause of se stenosis. This is shown, for example, by repe attacks of chorea as evidence of recurrent act of the rheumatism. Let us hope that recu rheumatism is more usual, for upon this hypot there is more encouragement to efforts at preven This chronic process of fibrosis is sometimes met in the aortic and tricuspid valves, and also in myocardium.

Many physicians have noticed the occurrence chronic arthritis of the hands in association advanced mitral stenosis, and there is also a cons able number of examples of fibrosis of the kid with the same association. It is difficult to s with any certainty of a chronic arthritis of rheum origin in the child, although I suspect that it occur in exceptional cases. Rheumatic nodules undoubtedly remain for long periods of time, r a considerable size and show much fibrous ch under the microscope, as also may a chronic fibr and tenosynovitis in the palms of the hands. S cases of chronic arthritis I have seen have complicated with sclerodermia and with endocar of the sclerotic type, but these are very rare and rheumatic origin may be questioned.

My experimental observations, made with Paine on endocarditis, suggested that infectio the valves takes place from the coronary circul and not from the blood in the heart chambers, that morbid changes begin within the structu the valve as they do within the wall of the vermi appendix.

The Pericardium.

The morbid changes in the pericardium also l within the pericardial tissues beneath the endothel When the inflammation is severe, an infinite nu of necrotic areas appear and destroy the endothel thus producing the shaggy appearance. In subendothelial pericardial tissue there are numbers of blood capillaries, and their distension rupture explain the fact that acute rheumatis the most frequent cause of hæmorrhagic pericar The numerous foci of inflammation account bot pericardial adhesion and for the fact that wh pericardium has been thought to be generally adh a renewed outburst of infection may lead to a loca but unexpected reappearance of friction in some which has not become glued down by the e attack. The chronic fibrotic type of pericardit which nodules of considerable size may be found in which great thickening may occur, is of cl interest, because it may very closely simula pericardial effusion, and thus prove a pitfall t clinician or radiologist who is not well acquainted the possibilities of rheumatic infection.

It is generally accepted that an extensive perica effusion in childhood—i.e., one sufficient in to strangle the cardiac movements—is altog exceptional. However extreme the area of ca dullness, the physician's first thought must a be: is this the result of cardiac dilatation, dilatation with a thickened and adherent pericard

Prolonged periods of pericardial friction an reappearance when, after a latent phase, the infe again becomes active, make it easier to prove an obstinate but active infection is the cause thickened and fibrotic pericardium, than that the cause of a chronic valve lesion. In exceptional cases the process may affect not onl pericardium but both pleuræ, and the result i remarkable sequence of events met with in mu serositis. These are: strangling of the heart, enlargement of the liver and spleen, and recu and severe ascites. In childhood, however, t more frequently due to a chronic tuberculous infe of the serous membranes. In other cases ch infection of the pericardium, pleuræ and media tissues causes an indurative mediastino-perica which eventually, by gross mechanical shackli the heart, produces fatal consequences withou

eated outbursts of active infection that occur in ltiple serositis. The healing of a severe peri- ditis is and must be slow, and the presence of tially healed and dangerous necrotic areas in pericardium is of interest.

girl admitted to hospital in the middle of January, severe pericarditis, eventually recovered from all ve signs of the disease, but the heart was so greatly ired that she died in the middle of April. The post- tem examination showed that, although the pericardium becoming generally adherent, the adhesions at the back e still soft and only partially formed. This gives definite rmation upon the slowness of the process of healing a severe pericarditis. Even if the adhesions had been nd and firm, the recovery of the cardiac muscle would have to be reckoned with. This proved to very imperfect, extensive fatty change was present throughout the rt wall. The bearing of these observations upon treatment bvious.

he danger of active foci is well illustrated by another ld who was in hospital eight and a half months with eated outbreaks of recurrent pericarditis, persistent fever l recurring subcutaneous nodules. After death great kening of the pericardium was found, but there was fluid in the sac and only a few recent adhesions were sent. Here there was continual activity and a condition ch I should term a malignant rheumatic pericarditis.

Interstitial Lesions in the Myocardium.

The interstitial tissues of the myocardium are maged in rheumatism much as the endocardium d pericardium are. In my experience it is unusual see the extensive scar formation such as occurs, example, in syphilis of the heart, but in inveterate ses extending beyond the age of childhood this may ur, and the resulting perivascular fibrosis is actly comparable with that seen in chronic pendicitis and in rheumatic arthritis, which fects the vessels of the synovial membranes and ubtless interferes with their normal function.

Clinical investigation has proved that from time time the miliary lesions in the connective tissue osely connected with minute arterioles may damage some degree the conducting fibres of the cardiac echanism Temporary heart-block is an example.

Malignant Endocarditis.

There is another problem in the morbid anatomy acute rheumatism which in some respects is the ost important of all. Can the infection develop a cal virulence and then obtain almost complete astery of the situation? or, when a local edominating bacterial virulence occurs, is it because e rheumatic disease has prepared the way for her infections? No one can possibly answer this uestion until the cause of acute rheumatism is cided, and for this reason alone I look upon the oblem as one not for controversy but for research. is essential that the facts should be thoroughly derstood. For example it is common knowledge at in "subacute bacterial endocarditis" a patient ten complains of rheumatic pains. This may or ay not be evidence of the rheumatic nature of the sease. It is well known that rheumatism often tacks more than one valve, and it is interesting to nd the overwhelming frequency of the combination the mitral and aortic lesions, that is, of damage two valves in close proximity. This combination very frequent in childhood and of the greatest inical importance. If these cases are traced into dolescence, and some of them suffer from repeated tacks of rheumatism, they may die of malignant ndocarditis. It is this combined lesion which in my perience most often develops malignant endocarditis. mong cases with a rheumatic history are found not ly malignant endocarditis and fugitive pains, but so multiple arthritis, nodules, Osler's spots, and ericarditis. Further, as post-mortem and clinical idence show, the arthritis and the pericarditis may bside but the endocarditis come gradually to the re and prove to be of the malignant type. treptococci may be recovered from the blood in vere rheumatism and yet the patient may recover. ir William Willcox recorded the case of a man from whom Dr. Paine had isolated the micrococcus from the blood during an attack of pericarditis, and who was at work seven years later; I have had other examples in childhood. It is well known, on the other hand, that in many cases of malignant endocarditis the streptococcus cannot be isolated from the blood for long periods and sometimes not at all. In 1912 I showed at this society the heart of a boy, aged 7, who died in his first attack of acute carditis. On the mitral valve was a large fungating vegetation, and there had been arthritis and severe pericarditis with an unusually copious hæmorrhagic effusion. Large subcutaneous nodules may also occur in cases of malignant endocarditis associated with rheumatism; in one of these we demonstrated the micrococci in a minute blood capillary.

I lay stress upon these points because it is of the utmost importance for the future of the treatment of heart disease, and for the elucidation of the cause of acute rheumatism, that a decision should be reached as to whether or not there is a malignant type of rheumatic endocarditis. If there is, then it will mean that the cause of the disease "acute rheumatism" is ascertained; if there is not, we are left with two difficulties for solution. The first is the discovery of the real cause, and the second is the reason for the frequent association of a streptococcus with the lesions of acute rheumatism, for the appearance of this micrococcus has perplexed investigators all over the world. In the cases of the type of which I am speaking the only difference in the morbid anatomy of the valve from that of a simple rheumatic endocarditis lies in the necrotic tissue of the vegetation. In the first it is crowded with the micrococci, but in the simple form they are destroyed or apparently destroyed, and must be searched for in the zone abutting on the necrotic area, where they will only be found in scanty numbers. This difference seems to me the essential factor in the problem, and all the secondary consequences of an active local focus impinging on the blood stream merely confuse the issue by producing a general septicæmia and diverse symptoms from infarctions, which naturally lead us to believe that we are dealing with a disease of different nature from acute rheumatism. The alternative explanation, that this form of endocarditis is the result of a secondary infection attacking damaged valves, is undoubtedly much more easily comprehended, because it is most difficult to find the micrococci post mortem in the valve of simple endocarditis, but in the malignant endocarditis they abound.

Is rheumatic endocarditis frequent in the young? and are the possibilities of secondary infections from tonsillitis, from septic sores, from otitis media, from empyemata and broncho-pneumonia, frequent? As we are compelled to answer both questions in the affirmative, malignant endocarditis should be frequent in the rheumatic child, and yet, as a fact, it is exceptional. Fatal rheumatism and tuberculosis in the young have almost invariably a widespread distribution. It is in later life that, in both diseases, a local lesion comes to the front and overpowers all resistance. We have to explain the exceptional cases of malignant endocarditis in the rheumatic child by supposing that other lesions, such as the pericarditis, the arthritis and the nodules, may behave in the usual fashion of acute rheumatism and subside, and yet the endocarditis progress. Have we, then, two acute processes occurring simultaneously, one undoubtedly streptococcal and the other the mysterious rheumatic infection? If the damaged valve—the result of past attacks of rheumatism—only serves to give a foothold to the secondary infection, why should the rheumatic infection become active in other organs simultaneously? When we consider malignant endocarditis and rheumatism, it becomes apparent how vital the bearing of streptococcal infection is on the problem of causation. Twenty-five years ago Dr. Paine and I remarked to one another that the great battle as to causation would be fought not over acute rheumatism but over this form of endocarditis, and I still hold that view.

Recent Investigations.

A recent paper by K. E. B. Birkhaugh [1] is one that must arouse attention. Here, again, a streptococcus is the centre of interest. When we brought forward our first paper in September, 1900, we were faced by the difficulty that if we called the micrococcus a streptococcus the reception would be: "These gentlemen have rediscovered the streptococcus pyogenes"! There was then no general realisation of the complexity of the streptococcal group. That difficulty has long passed away, to be supplanted by the converse and formidable problem of how to distinguish the various groups of streptococci. The researches of Swift and Kinsella, Andrewes and Derick, could find no specific type of streptococcus in acute rheumatism. Then came the work on scarlet fever, and the development of the Dick test. Here, again, we find the streptococcal group in evidence, and we must remember the association of scarlet fever and rheumatism. Birkhaugh isolated, from an acutely fatal case of juvenile rheumatism, what he terms "a new species of non-methæmoglobin forming, inulin-fermenting, bile-insoluble and toxigenic Gram-positive streptococcus." This he also isolated from the tonsillar crypts, blood and cardiac vegetations, fæces and urine. He groups it apart from the *Streptococcus hæmolyticus* and *Streptococcus viridans*. Among 68 strains of this streptococcus 72 per cent. were found to produce a soluble toxic filtrate with which 76 per cent. of rheumatic children gave positive skin reactions. Intramuscular injections of increasing doses in laboratory animals and in human beings susceptible to the toxin produced a neutralising antitoxin. The micro-organism injected into rabbits produced the various manifestations of rheumatism. Finally, the author of the paper, who had previously given a strong positive intradermal reaction, produced in himself, by intra-articular and intramuscular injections of large doses of the soluble toxic filtrate, an acute polyarthritis of the rheumatic type. This is a research which, if it meets with confirmation from other investigators, will mark a definite step forward in our knowledge of the causation of acute rheumatism, but it clearly needs very thorough confirmation, and at the moment I use it chiefly as an illustration of the modern lines of thought on the problem of the streptococci.

In association with rheumatic carditis we sometimes meet with unusual rheumatic manifestations such as phlebitis. I believe this to be of the same type as the other lesions: an interstitial inflammation in the wall of the affected veins. Similarly the peritonitis is strictly akin to the pericarditis, pleurisy, mediastinitis, arthritis and tenosynovitis. Again the tonsillitis, when severe and still more when recurrent, will lead to fibrosis and, as a result, the penning up of foci of infection deep from the surface. Surgery has now demonstrated this incontrovertibly. The involvement of the tonsillar cervical glands is easily understood, and the study of the morbid anatomy of the disease leads us to believe that in these glands there will be great destruction of the infective agent if it is streptococcal. Clinical observation bears out the morbid anatomy, for there is a large group of mild rheumatic infections which show themselves in sore-throat, enlargement of the cervical glands, and a passing cardiac dilatation from the escape of the infection or its toxin into the system.

2. LESIONS OF "NOBLE TISSUES."

In the second group of lesions caused by the rheumatic infection we are once again confronted by a large unexplored field, and realise how essential it is to decide the exciting cause of the disease. We know nothing fundamental about the nature of the poisons in acute rheumatism, or to what extent they act by direct injury to the tissues or by the more subtle process of building themselves into them and thus producing some more or less permanent alteration in the normal metabolism. The bacteriologist and biochemist will no doubt slowly solve some of the essential problems which the clinician and morbid anatomist can but dimly recognise. We know with certainty that direct damage is done to the muscle of the heart and to a lesser degree to the nervous system, as shown by the meningo-encephalitis of chorea. We suspect from the highly nervous temperament and the occasional thyroid enlargement of many rheumatic children that an attack of acute rheumatism may possibly alter the metabolism of, at any rate, the normal functioning of the tissues long after any active sign of infection has disappeared.

I am a firm believer in the hereditary factor in acute rheumatism. Upon this the private case-book of the late Dr. W. B. Cheadle, dealing with educated patients, gave clear evidence: in 30 consecutive cases 23 gave a family history, and in 103 out of 180 there was also family history in parents or near relatives. Again, when acute rheumatism attacks children under 5, there may be striking examples of this hereditary factor.

A female, aged 2, had severe rheumatic carditis with arthritis. Her father had had rheumatic fever, and her maternal uncle died of the disease. A female, aged 4½, had acute rheumatic arthritis, and her mother had three attacks of acute rheumatism and suffered from heart disease. A female, aged 3½, died from acute carditis. Her father had suffered from acute rheumatism, and her paternal uncle had died of the disease. A male, aged 4½, had an attack of acute rheumatism with arthritis and carditis. His father had also had an attack of acute rheumatism.

It is my belief that some peculiarity of constitution is transmitted to such children, rendering them less resistant to the infection, but it is impossible to speak with any certainty in our ignorance of the rheumatic toxins.

We know that the cardiac muscle may be terribly injured. Fatty changes are the most easily demonstrated, and on two occasions I have seen small cardiac aneurysms of the right ventricle, the blood in the cavity of the chamber being separated from the pericardial cavity only by the visceral pericardium. When there are also extensive and scattered lesions in the interstitial tissue, it can be readily understood how grave the results must be. It is most exceptional for this condition of the heart to be unattended by some degree of pericarditis, but cases have been recorded and death has resulted from acute asystole due to a primary rheumatic myocarditis.

Injury to the Nervous System.

I spoke of chorea as a rheumatic meningo-encephalitis—a view held by Dr. Paine and myself as the result of our investigations, further upheld by Dr. Gordon Holmes and myself, and again supported by the distinguished pathologist to the National Hospital for Nervous Diseases, Dr. J. G. Greenfield, in a detailed investigation of a fatal case of chorea, published in THE LANCET (1922, ii., 603). It is supported also by various Continental investigators. From the standpoint of morbid anatomy all are agreed that the lesions in the nervous tissues are comparatively slight. Recent years have, however, revealed to us much that was unknown before, for the appearance of encephalitis lethargica has shown us conclusively what devastation apparently insignificant lesions may produce in such a highly evolved organ as the brain. Not only may the physical disabilities be great, but the character of the patient may be entirely altered. We know that chorea is an outstanding result of rheumatism and attracts the attention of the most superficial observer. We also know that the rheumatic child is exceedingly nervous, and that in chorea there may be delusions and even a condition bordering on dementia. Rheumatic children may also, between attacks of acute rheumatism, suffer from prostrating headaches, from paroxysmal attacks of cyanosis of a limb, or spasms of the muscles, or intense neuralgic pains. Still more remarkable are attacks of anginal pain, in which there is undoubtedly a so-called functional element, but which nevertheless may prove fatal if there is organic disease of the valves. We cannot

[1] Journal of Infectious Diseases, May, 1927.

satisfactorily with heart disease in the young do not realise how important a part the nervous m takes in its management and treatment. orea is the most frequent solitary manifestation eumatism, and yet it may be a precursor of and a festation in the most severe attacks. I believe injury to the nervous system not possible to ise in the terms of morbid anatomy may lower esistance of children to the rheumatic infection, hat continual strain from brain work, not perhaps y high degree of excellence, tells upon this kind ild much more than we recognise. On account eir keenness and lack of reserve nerve power, children require more rest than others, and if do not get it they are more likely to be attacked ie disease. I look upon lowered nerve tone as an rtant predisposing cause. Certainly no children a severe attack of heart disease require more and tact in nursing and handling. In many cases, excitability of the heart's action, which adds n to the difficulty of obtaining complete recovery, no means dependent upon an active myocarditis, upon some damage in the nervous system.

Injury to the Blood.

metimes the streptococcus can be isolated from blood stream and at other times it may be onstrated in the diplococcal form in the morphonuclear leucocytes. It would surprise me ly if either of these events were frequent, because esions produced are chiefly focal and the tissue-tance to the infection is great, so that the ococci are destroyed more or less completely in lesions. The red cells suffer severely and the oglobin in particular is damaged by the rheumatic ons. The anæmia may be very slow in abating, I suspect that prolonged anæmia, associated in escence with rheumatic endocarditis, favours the lopment of malignant endocarditis. Swift and t. Miller, junior, have recently investigated the e cells, and find that the leucocytosis may reach to 00 per c.mm. Their researches have been very ful and detailed, and they hold that anti-rheumatic s will control this leucocytosis, which will again rt itself should they be discontinued while the tion is active. I am anxious to corroborate observation, for clearly it may help us in estimating progress of a case.

here may be other and more subtle changes in blood plasma as a result of the rheumatic infection, of such I have no knowledge.

SUMMARY.

have endeavoured in this lecture to bring into ninence the two chief ways in which acute matism damages the heart and other organs, ng my argument upon experimental and patho-cal investigations, with a streptococcus as the med cause. There are the local interstitial lesions ch tend to necrosis and fibrosis, and there are toxic effects of the circulating poisons. The rstitial lesions seem to me to produce results which ical observation at the bedside corroborates: ular lesions, pericarditis and local myocardial urbances. The toxic effects of the infection, gh well recognised at the bedside in the profound mia and damage to the cardiac muscle and nervous em, cannot yet be correlated with any definite on, though I believe it would be difficult to prove a streptococcal infection could not produce results. I can imagine no more difficult problem the isolation of these poisons, some of which possibly only be produced in the living organism not in vitro. If the exciting cause of the disease still unknown, it is at least apparent that we st expect it when discovered to give us an lanation for the many ascertained facts of the bid anatomy, and all who are interested in the at problem of rheumatism must look forward with erness to the solution. Whatever it may be, I should to take this opportunity to say of my friend and worker, Alexander Paine, what that great genius from my native county of Somerset, Roger Bacon, said of Peter of Maricourt: "Of discourses and battles of words he took no heed, he followed the works of wisdom and in them found rest. Through experiment he gained knowledge of natural things."

CAROTID CAVERNOUS SINUS ANEURYSM.

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IN this article I refer particularly to carotid cavernous sinus aneurysm, but many of the references and figures relate to articles on "pulsating exophthalmos," a condition in which the exact pathological lesion is often unknown though the majority of cases are due to carotid cavernous sinus aneurysm. This condition, although uncommon, is not one of the rarities of medicine. There are still many points which require elucidating, and as it rarely falls to the lot of any one person to see more than one or two cases their record is valuable.

Classification and Ætiology.

The cases are classified into traumatic and spontaneous.

In the traumatic group the injury may be direct, such as a gunshot wound, but it is more usually caused by indirect violence, often a fracture of the skull.

In spontaneous cases the main factor is disease of the artery resulting either in its rupture or in the formation of a true aneurysm, which ruptures secondarily. A large proportion of these cases occur in females, and Hart,[1] writing in 1862, pointed out the ætiological significance of weakness after fever or childbirth. De Schweinitz and Holloway [2] found that the onset occurred during pregnancy in 14 out of 49 women suffering from pulsating exophthalmos. Strain may also excite the condition, although sometimes the onset occurs while the patient is at rest. Locke, in an important article [3] on pulsating exophthalmos, gave figures from which it appears that approximately three-quarters of the cases are traumatic, that three-quarters of the traumatic cases occur in men, and that three-quarters of the spontaneous cases occur in women.

The average age for the traumatic group is towards the end of the third decade, and for the spontaneous towards the end of the fifth decade.

The trauma may be very slight. Picqué[4] recorded a case in which the patient received a blow on the right eye which caused neither loss of consciousness nor any serious contusion to the eye. Cases of this kind probably belong ætiologically to the spontaneous group, the trauma acting as the final factor.

Anatomy.

The cavernous sinus is situated on the side of the body of the sphenoid and extends from the sphenoidal fissure to the apex of the petrous portion of the temporal bone. The superior ophthalmic vein drains into the anterior end of the sinus through the sphenoidal fissure, communication being thus established between the angular vein and the sinus. The inferior ophthalmic vein may enter the sinus or may join the superior ophthalmic vein. Posteriorly the cavernous sinus drains into the superior and inferior petrosal sinuses, which are closed in by rigid structures—bone and dura mater—and thus the effects of the arterio-venous communication are chiefly thrown on the veins draining into the sinus. Some of the cerebral veins drain into the sinus, which also communicates with the pterygoid venous plexus. Running through the sinus is the internal carotid artery, accompanied by filaments of the carotid plexus and the sixth nerve. Situated on the outer wall are the third and fourth nerves, with the ophthalmic and superior maxillary

divisions of the fifth. The cavernous sinuses are connected by the circular sinus.

The ophthalmic vein, the third, fourth, and sixth nerves, and the branches of the ophthalmic division of the fifth pass through the sphenoidal fissure. The superior maxillary division of the fifth nerve passes through the foramen rotundum. The optic nerve, in close relationship to the anterior end of the cavernous sinus, passes through the optic foramen accompanied by the ophthalmic artery.

Symptoms and Signs.

The severity of these varies considerably with the size of the arterial rupture and the presence or absence of clotting. When arterio-venous communication is established the blood pressure in the cavernous sinus is raised, reversing the flow of blood in the ophthalmic veins. These pressure changes are also transmitted to the sinus of the opposite side, so that the symptoms and signs are occasionally bilateral.

The Bruit.—As a rule the first symptom is a noise in the head, which has been variously described as "humming," "buzzing" or "puffing." This noise may be either (1) continuous, with increase at each systole; (2) intermittent, corresponding to the heart systoles; or (3) continuous; it is a source of great annoyance to the patient and interferes with his sleep. The note varies with the size of the communication, and the intensity with the alterations in blood pressure, due to change of posture, exercise, &c. The noise may be so loud that it is audible to people near at hand; it may be heard in the temporal, parietal, and occipital regions, and in the ear and orbit. Pressure on the affected artery will usually stop it, but occasionally bilateral carotid pressure is necessary. Pressure at the inner canthus may stop the bruit. On auscultation it can be heard over the affected eye, usually over the whole head, over the facial bones, and along the course of the carotid artery involved. In traumatic cases it may be heard immediately the patient regains consciousness, but if the tear is a small one or if it is blocked by clot it may not become audible for some time. According to Rhodes [5] the average interval is 21 days, but the onset may be delayed for months or even years. In spontaneous cases it is usually sudden.

Exophthalmos is generally the next symptom to appear, and is classically but not invariably present. Typically it is of the pulsating type, but this again is not invariable, as is shown by the example of Delore, Aurand, and Roland.[6] The pulsation may be very slight, and detected only by pressure on the eye. At times the exophthalmos becomes so extreme that dislocation of the eye results. Williamson [7] writes: "On raising the upper eyelid to gain a better view, the eye suddenly shot out in front of the lids, like the forward dislocation that takes place when the speculum is pressed back after division of the tendons in the operation of excision."

Corneal ulceration may follow severe exophthalmos, and endanger the integrity of the eye. This is more likely to occur on account of the neurotrophic changes mentioned below.

Dilatation of Veins and Venules.—As a result of the increased blood pressure, dilatation and subsequent thickening of these vessels occurs at times with a pulsatile tumour, possibly with a thrill, situated typically in the upper and inner portion of the orbit on the affected side. Cauchoix[8] states that this tumour is present in from one-quarter to one-third of the cases. The dilatation may extend to the veins in the supra-orbital region or to the veins of the face as in Williamson's case,[7] in which pulsation and a thrill could be felt along these veins as far as the angle of the jaw. The congestion of the smaller vessels causes great vascularity and œdema of the conjunctiva. This chemosis may be so severe that the eye is hidden from view and ulceration of the conjunctiva ensue. Retinal examination shows dilatation and often pulsation of the veins, while the optic disc may be swollen.

Nerve Involvement.—Sometimes a nerve lesion caused, either directly by the injury or indirectly by pressure and stretching in the sinus, in the sphenoidal fissure, or in the supra-orbital notch. In two latter cases the superior maxillary division of the fifth nerve escapes. Stretching of the optic nerve follows the exophthalmos. Diminished vision or blindness, paralysis of the eye movements, ptosis, a dilated and fixed pupil, and loss of corneal sensation result. De Schweinitz and Holloway [2] state that 20·4 per cent. of cases of pulsating exophthalmos terminate in blindness, others have diminished vision and not more than 11·1 per cent. retain normal vision. Of the nerves running in the sinus and its wall the sixth is that most commonly involved. Injury to the branches of the fifth nerve, which is the one least commonly affected, results in pain, as in Taylor's case[9] or in numbness, as in a case recorded by Berry.[10]

The symptoms described are typical of the condition but are not necessarily all present. In Murray's case there was bilateral exophthalmos, but no interference with the eye movements and no blindness. This is possibly accounted for by the presence of an unusually large communication between the two sinuses, causing bilateral exophthalmos while relieving pressure. Holmes[12] refers to a case in which the swelling of the conjunctiva was so great that the lower eyelid was covered and yet the eye was movable and the vision perfect.

In rare cases the eye-changes first appear on the side opposite to the lesion. This is difficult to explain but possibly occurs when the arterial rupture is situated immediately opposite the opening of the circular sinus and the blood, as it is forced through the hole in the artery, transmits its pressure directly to the opposite side.

Differential Diagnosis.

The following conditions have to be differentiated from a carotid cavernous sinus aneurysm: (1) Pulsating orbital tumours—e.g., malignant tumours and cirsoid aneurysms. (2) Aneurysms of the ophthalmic artery in the orbit or within the skull. (3) Orbital arterio-venous communications—Lansdown's case. (4) Orbital cellulitis. (5) Cavernous sinus thrombosis. (6) True aneurysms of the internal carotid artery in the cavernous sinus. These are much more rare than carotid cavernous sinus aneurysms and may, as in the case of Morax and Ducamp,[14] give rise to no symptoms unless the aneurysm ruptures. Barr and Rigby [15] state that it is the aneurysm of the internal carotid alone which gives rise to the intermittent bruit. Holmes [16] and Adams [17] record examples of this condition, in each of which there was involvement of branches of the fifth nerve, but no mention is made of any exophthalmos, pulsation or bruit. (7) Maynard [18] reported a peculiar case of pulsation and exophthalmos in which œdema of the optic nerve accompanied internal hydrocephalus.

There are a few cases on record which appear clinically to be examples of this condition, but which at necropsy showed no communication between the carotid artery and the cavernous sinus.

Treatment.

Procedures adopted in the treatment of this condition are not without risk, and therefore one has to consider carefully whether these measures are justifiable. Rarely a spontaneous cure occurs. The condition may remain stationary, as in Williamson's case in which there was no alteration during a period of 23 years. A stationary case may again become progressive, as in the example of Bonnan, Bujadoux, and Lyonnet,[19] where this occurred after an interval of eight years. Typically, however, the condition is steadily progressive and, although at times the swelling and exophthalmos may diminish, there is a very grave risk of loss of sight. Further, the persistent noise in the head is a source of great annoyance to the patient from which he may demand relief in spite of the risk.

eneral measures are rest in bed on a light, dry , and the use of such drugs as iron lactate, potas- n iodide, acetate of ammonia, and belladonna. ler such treatment cures have been recorded, the results are so uncertain that the patient must nder careful observation so that an operation can erformed whenever necessary. If improvement rs the patient must be warned of the danger of rrence and advised to report at once any change he condition. If the exophthalmos is very marked eyes may be protected by suture of the lids. subcutaneous or intramuscular injection, repeated y four to eight days, of 100 to 250 c.cm. of m 2 per cent. gelatin solution in serum has been ocated.

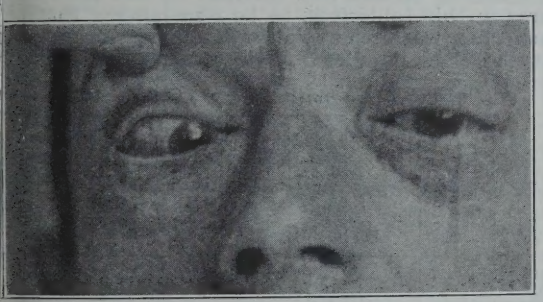
)irect attack on the aneurysm has been suggested never attempted.

Measures applied to the carotid artery carry a greater in the spontaneous than in the traumatic group, he patient is older and the conditions for surgical rference not so favourable. Further, as there generalised disease of the blood-vessels, an ient collateral circulation is less likely to become ablished.

. Carotid compression by digital or mechanical ans is tedious, and the results are uncertain. tting is more likely to ensue in the diseased vessel the spontaneous cases than in the healthy vessel the traumatic cases. Compression of the carotid ometimes useful as an indication of the risks of ture, for if it produces vertigo, motor, or sensory turbances of the limbs or loss of consciousness, reliminary course of carotid compression should carried out in order to improve the collateral ulation.

. Ligature of the common carotid is attended h risk both to life and to the normal functioning he brain, as immediate ischæmia or later embolism

FIG. 1.



Condition before operation.

ay cause temporary or permanent hemiplegia or hasia. The mortality-rate of this operation for is condition is under 10 per cent., whereas ligature the vessel in cases of wounds, tumours of the neck, ., carries a much higher death-rate. Local anæs- esia diminishes the risk of cerebral complications, if any ill-effect is noted the ligature can then be osened. The occlusion of the vessel should be rried out very slowly and gradually during a period some minutes, or a Crile's clamp may be temporarily plied. A disadvantage of this operation is that a llateral circulation may be rapidly set up through e external carotid artery; to avoid this the latter ay be ligatured at the same time.

3. Ligature of the internal carotid artery avoids e disadvantage of ligature of the common carotid hich has just been mentioned. The operation is ther more difficult, and for this reason it has been ld that common carotid ligature is preferable in e spontaneous cases, as the vessel is probably seased and there is risk of emboli becoming detached. double ligature of the internal carotid has been tempted, the first ligature being applied in the ck and the second immediately proximal to the origin of the ophthalmic artery, but the result was fatal.

4. Bilateral carotid ligature. Following the ligature of the carotid artery the bruit usually ceases, but at intervals varying from hours to months it may return in a diminished form or with an altered note, and may then persist or increase in intensity or disappear again. With the return of the bruit the question of ligature of the opposite carotid artery arises. This should not be carried out until several months after the first operation, when the risk is apparently not

FIG. 2.

After ligature of veins at the inner canthus.

greater than that attached to ligature of one carotid. Even then cure does not always result.

It has been stated that there is an ultimate diminution of cerebral function after ligature of both carotids, but this has not been confirmed.

Procedures on the orbital veins are of three kinds:—

1. Compression has been used alone or in combination with medical treatment, or combined with compression or ligature of the carotid artery. An interesting example of mechanical pressure in treatment is afforded by a case recently sent to see me.

A woman, aged 39 years, had suddenly noticed, after telephoning, a noise "like steam being let off" in the left occipital region. This was followed two weeks later by a swelling below the left eye. Five weeks after the onset there was ptosis, exophthalmos, and diplopia with increased swelling. On examination there was a bruit which ceased on pressure over the left common carotid and at the inner canthus of the left eye. The patient, who had noticed that pressure at the inner canthus gave some relief, was wearing pince-nez spectacles, and had had made a metal prolongation with a small pad to cause pressure at the inner angle of the left eye.

2. Other measures calculated to induce clotting, such as electrolysis, puncture with hot needles, and the injection of drugs such as perchloride of iron and iron lactate have in some cases resulted in improvement and cure, but on the whole have been considered dangerous. Now that the injection treatment of varicose veins has become popular, this method may receive more favourable consideration.

3. Operation on the orbital veins was first carried out by Lansdown[13] for a case of pulsating exophthalmos not due to carotid cavernous sinus aneurysm. This operation has been used (*a*) as a primary method of treatment; (*b*) combined with or secondary to carotid ligature.

Locke[3] says that under no condition should an attempt be made to perform an orbital vein ligature and a carotid artery ligature at the same sitting, as the results have been unfortunate.

The following types of operation have been used: (*a*) ligature of the veins at the inner canthus; (*b*) ligature of the superior ophthalmic vein far back in the orbit; (*c*) ligature of the inferior ophthalmic vein, which has been performed on one occasion.

I adopted the first of these methods in a case which came under my care.

A male, aged 40 years, was admitted on July 9th, 1927, with severe concussion and a fracture of the skull. An X ray examination confirmed the presence of a fracture in the right parieto-occipital region, but there was no

evidence of involvement of the body of the sphenoid. He was discharged on the twenty-third day. Three weeks later he returned, stating that a few days before discharge he had noticed a throbbing noise in the left ear but had not mentioned it. It had persisted since, and was less marked on sitting up, while he noticed that it disappeared with pressure on the upper and inner part of the orbit. Three days after discharge he had noticed swelling of the lower eyelids "like bladders," and three days later double vision on looking to the right; 16 days after discharge both eyes were bulging, the right more than the left.

On readmission there was a paresis of both external recti with congestion of the conjunctivæ, more marked on the right than on the left. The vision and fundi were normal. A bruit could be heard over the whole head, maxillæ and left mandible, and the left common carotid artery. It ceased on pressure over the left common carotid or on the upper and inner part of the left orbit. There was no pulsation of the eyes, no exophthalmos, and no pulsating tumour. The branches of the fifth nerve were not involved.

As pressure on the upper and inner angle of the orbit caused cessation of the bruit, the supra-orbital and angular veins were ligatured under local anæsthesia. The bruit did not cease, and there was considerable hæmorrhage which had to be controlled by packing. Soon after this operation there was a double pulsating exophthalmos with great œdema and congestion of the conjunctivæ, which bulged forward between the eyelids. The pupils were dilated and irregular, and there was paralysis of all the eye movements. The noise in the head varied in intensity and at times ceased. Vision of both eyes failed rapidly. On the fifth day after operation it was decided, on account of the failing vision, to ligature the internal carotid artery, using a fascial graft from the thigh as a ligature. This operation reduced the noise in the head so that the patient stated "it takes me all my time to hear it." No bruit could be heard over the head or over the left carotid, but there seemed to be a very faint one audible over the right carotid. The œdema of the conjunctivæ persisted for some time, but one month later it had lessened considerably, and after another three weeks had completely disappeared, although there was still great vascular congestion of the conjunctivæ on both sides.

At present there is no exophthalmos and no pulsation. He has lost the sight of both eyes. There is still slight increased vascularity of the conjunctivæ. The pupils are semi-dilated and fixed and the discs show optic atrophy. There is a slight degree of ptosis of the left upper lid; the eye movements are normal except for a very slight degree of weakness of elevation of the left eye.

In 1906 Jameson Evans[20] reported a case of pulsating exophthalmos in a child of 6 after a puncture wound of the lower lid. Improvement followed treatment by rest, potassium iodide, and calcium chloride. Mr. Jameson Evans informs me in a personal communication that in April, 1907, he ligatured the angular vein as a primary procedure and cured the exophthalmos and bruit. From the nature of the wound this case was probably one of arterio-venous communication in the orbit.

Ligature of these vessels in cases of carotid cavernous sinus aneurysm is not to be regarded lightly, as the control of hæmorrhage may be difficult on account of the extreme vascularity. This has been noted by other authors—e.g., Flemming[21] and Cauchoix.[8] The latter states that the operation is of use only if a dilated vein is to be seen. My case suggests that the severity of the condition may even be increased by this operation. This may be accounted for by the presence of a resulting thrombosis in the cavernous sinus or by the partial cutting off of the means of escape of blood from the sinus, resulting in further congestion of the ocular and orbital vessels. An exaggeration of the condition has occurred in other cases, but not to such an extreme degree. Pritchard and Burghard[22] found that after ligature of the right internal angular vein, which was accompanied by severe hæmorrhage, there was no perception of light for some days. Gifford[23] recorded a case in which, after ligature of the common carotid and a much dilated vein in the upper lid, there was a temporary increase in the severity of the symptoms with increased exophthalmos and ulceration of the cornea. In the same article he refers to five cases of pulsating exophthalmos, including his own, in which this operation was performed; in three of these there were "alarming symptoms." This operation appears to give the best results in cases of arterio-venous communications in the orbit, but in carotid cavern sinus aneurysm the results may prove less satisfact than those of carotid ligature.

Pollet and Decherf[24] used periarterial sympath tomy in one case, with a short temporary improvem followed by a rapid increase in severity.

Resection of the cervical sympathetic, combi with carotid ligature, has been advised in order produce a vasodilatation and so diminish the risk cerebral complications. The use of vasodilator dr for the same purpose has also been advocated.

Ridley[25] refers as follows to a case in which comm carotid ligature had failed: "In this case, long af ligation of the common carotid, the facial art dilated until it became as thick as one's little fing where it joined the orbital arteries. It was ti The proptosis and the pulsation all ceased, and t patient, although she lost her vision under pressu had no trouble and practically no proptosis no

Progress.

In favourable cases the bruit disappears immediat but may return, to disappear again later. Rivingto in an excellent article, referred to a case in wh Corner ligatured the right common carotid arte the bruit persisted for 12 years and then disappear The interval here was so long that the cure wo appear to be spontaneous rather than a direct res of the operation. The remaining symptoms impr slowly, the exophthalmos and chemosis taking period of three to six weeks to disappear. The c junctival congestion persists for a still longer peri The muscular paralysis and vision improve slowly

De Schweinitz and Holloway[2] state that cereb complications occur in 9·8 per cent. of comm carotid ligations. This complication may arise a considerable interval after operation, and conval cence must therefore be slow.

Below is a table taken from Locke's article[3] wh tabulates the results. In comparing the mortal of common carotid and internal carotid artery li tures in this table it is to be remembered that o the former was used in the earlier days, when infecti increased the number of fatal cases.

Pulsating Exophthalmos: 1809 to 1923.

Percentages.	Digital compression (106).*	Ligation common carotid (234).	Ligation int. carotid (38).	Bilateral ligature (21).	Ligation orbital veins (19).	Ligation artery and veins (24).	Rest and medication (28).	Gelatin
Cured	} 26·41	} 65·81	21·05	} 61·91	42·12	37·50	14·29	31
Imp.			65·79		26·31	33·33	35·72	31
Neg.	73·95	23·93	5·26	19·05	26·31	12·50	42·88	37
Fatal	—	8·98	7·90	14·28	5·26	16·67	3·57	0
Unst.	—	1·28	—	4·76	—	—	3·57	0

* The figures in parentheses indicate the number of cases.
Imp. = improved. Neg. = negative. Unst. = unstated.

I wish to express my indebtedness to Mr. Jameson Evans for his information and help in t writing of this article.

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THE AFTER-CARE OF EPILEPTIC CHILDREN.

SURVEY OF CHILDREN WHO HAVE ATTENDED A RESIDENTIAL SCHOOL FOR EPILEPTICS.

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This survey has to deal with a total of 351 children who left the Lingfield Colony school during the period of eight years between Oct. 1st, 1919, and Sept. 30th, 1927. Children who attended the school for periods shorter than six months are not included.

Preliminary Note.

It is essential first to define the type of child dealt with. It would be a mistake to suppose that in a certified residential school any and every child subject to epileptic fits may find a place. The Board of Education divides epileptic children into two classes: those whose disease is so severe that it precludes them from attending ordinary elementary schools, and all those whose disease is, in this sense, "not severe." The latter class outnumber the former by about two to one.[1] Only "severe" cases are eligible for residential special schools and, as a matter of fact, only one-fifth of all the severe cases are accommodated there. Of the remainder a few are retained at elementary schools, some drift into poor-law and other institutions, while half of them, numbering in England and Wales at least 1350, are allowed to remain at home receiving no education at all.[1] The principal reason for this unsatisfactory state of affairs is deficient residential school accommodation; other reasons are unwillingness on the part of parents to let their children leave home, or neglect on the part of local education authorities.

It will be understood that the parents of children who are a bother to them on account of frequent fits or difficult temperament will press for their admission to a residential special school; and there is, no doubt, an unduly high proportion of such cases in the group under review.

Only "educable" children can be admitted. In this connexion the "educable" class includes, roughly speaking, all normal, dull and backward and feeble-minded children, but excludes imbeciles and idiots. By Binet or similar mental tests the lower limit of educability is reached with an intelligence quotient in the neighbourhood of 50. It must be remembered, however, that there are among epileptics a certain number of children whose intelligence either remains stationary or actually deteriorates, so that from time to time children in a school for epileptics fall from the educable into the ineducable class, and have to be discharged.

A further point with regard to the type of child requires mention. Most of the certified schools for epileptics are, like Lingfield, voluntary in character. As the demand for places much exceeds the accommodation the authorities have considerable powers of choice, and can exclude, if they wish to, children of lower mental grade or antisocial tendencies. Obviously the more carefully the cases are chosen the better will the after-care statistics be. For this reason it is very probable that other special schools might be able to show results rather more favourable than those recorded here.

To sum up, we are here dealing with a group of educable children of school age, all of them certified by medical officers specially approved by the Board of Education to be suffering from severe epilepsy. The mental grade of these children varies from normal down to feeble-minded, and the group probably contains an undue proportion of cases liable to frequent fits or antisocial conduct.

General Results.

Of the 351 children who left our school between 1919 and 1927, 4 died at school, 3 of them of epilepsy, and 1 of pneumonia. It has been found impossible to trace 15 others, so that there remain 332 cases, upon whose after-career report can be made. The present whereabouts of these 332 cases is shown in Table I.

TABLE I.

—	Number and percentages. M.		F.		Total.	
Not in Institutions.						
Self-supporting—						
No fits	27	16·1	18	17·3	45	16·6
Having fits	6		4		10	
Partly self-supporting—						
No fits	6	9·8	4	10·2	10	9·9
Having fits	14		9		23	
At day school—						
No fits	3	1·5	2	1·6	5	1·5
At home, unemployed—						
No fits	3	11·7	0	17·3	3	13·8
Having fits	21		22		43	
In Institutions.						
Inst. for epileptics	39	19·0	27	21·3	66	20·0
Poor-law or other inst.	15	7·3	6	4·7	21	6·3
Mental deficiency inst.	13	6·3	19	15·0	32	9·6
,, hospitals	15	7·3	4	3·2	19	5·7
Died.						
—	43	21·0	12	9·4	55	16·6
Total	205		127		332	

Perhaps the most remarkable finding in this table is the number of deaths. The average length of time since these children left school is four and a half years, and during that period 1 in 6 of them have died; the average stay of the 351 children at school was exactly three and a half years, and during that period only 1 in 88 died. The annual death-rate per 100 among those at school was 0·3, among those who have left 3·7. In the latter group the death-rate among boys is more than twice that among girls, a fact for which it is difficult to account. If the children who have died were excluded from the table the remaining percentage differences between the sexes would be less marked. The larger proportion of girls living at home without employment is, of course, what one would expect. Where there is reason to think that the girls are of material help in the work of the house they are included in the partly self-supporting class.

The small number of children still attending day school are likely to become self-supporting in the future, and may fairly be added to that group. If this is done the table may be summarised as follows:—

	Per cent.
Wholly or partly self-supporting	28·0
At home, unemployed	13·8
In colonies or other institutions for epileptics	20·0
In mental hospitals, Mental Deficiency Act Institutions, or poor-law institutions	21·6
Dead	16·6

Or, roughly speaking, of every 14 children who have passed through our school 4 are more or less self-supporting, 2 are at home without work, 3 are in epileptic colonies, 3 in other institutions, and 2 have died.

[1] Annual Report of Chief Medical Officer of Board of Education, 1927, p. 79.

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Nature of Employment.

In the majority of cases the nature of the employment of those who are self-supporting has been ascertained. Thus among the males there are 8 labourers, 7 shop assistants, 5 farm workers, 4 carpenters, 4 gardeners, 3 errand boys, 2 clerks, 2 soldiers, and 1 each of the following occupations: baker, boot repairer, coalman, decorator, fur trade, golf caddie, laundryman, lino factory, milkman, motor driver, motor mechanic, hotel porter, sailor, signwriter, and stoker in the Navy. Among the females there are 11 in domestic service, 3 waitresses, and 1 each of the following: coil winder, companion, laundress, mantle maker, ornamental flower worker, shop assistant, and ticket stamper. It will be seen that the occupations are mostly pretty simple in nature, and the list is worthy of study by those who are responsible for the education and training of epileptics.

It is interesting to note that one-half of the children who have subsequently become self-supporting, never received any bromide, luminal, or other anti-convulsive medicine at Lingfield. This surely suggests that the most effective therapy for epileptics is to be found outside the medicine chest.

Marriage.—Only one case in the series, a girl, is known to be married, and so far as our information goes there is no record of illegitimate children. It must be remembered, of course, that there is no one over 25 years old in the series, and that the average present age is about 19.

Influence of Fits.

The serious handicap that fits provide in the quest for employment is sufficiently shown in Table I. This handicap is further demonstrated if the present state of the patients is shown in relation to the fit incidence before they left Lingfield. The series was divided into three groups, comprising those who had no fits in their last two years at school, those who had occasional fits (less than one major fit a month or a few momentary attacks), and those who had more frequent fits. The results are shown in percentages in Table II.

TABLE II.

—	Frequent fits (206*).	Occasional fits (66*).	No fits (60*).
	Per cent.		
Partly or wholly self-supporting	12	37	73
At home, unemployed	16	18	2
In epileptic institutions	22	24	8
In other institutions	28	12	12
Dead	22	9	5

* Cases (also in Table III.).

It will be seen that the number of fits has a profound effect both upon the death-rate and the prospect of employment.

Influence of Intelligence.

The epileptic is subject to two other serious handicaps besides his fits. First, many epileptics are difficult to get on with, or may even possess marked antisocial tendencies. Secondly, a defect of intelligence is often present. The temperamental handicap does not lend itself to measurement, but the handicap of intelligence can be fairly accurately measured by mental tests. For the last seven years every child's intelligence has been assessed annually by a Binet (Burt's London Revision) test, and an intelligence quotient (I.Q.), obtained by dividing the mental by the physical age. The relation between the intelligence quotient last obtained before each child left the school and his present state is shown in the following table (Table III.), which demonstrates that the degree of intelligence also has a profound effect on the death-rate and on the prospect of employment. The number of young adult epileptics of low grade who are living at home again calls for comment.

There is, generally speaking, a fairly close, but no means uniform, relation between fit incidence a mental retardation, and this is evidenced by the sir larity between Tables II. and III. Investigations find out whether the age of onset of the disease had a influence upon the likelihood of an epileptic becomi self-supporting proved somewhat unexpectedly to

TABLE III.

—	Normal. I.Q. 90 or over (23*).	Dull and backward. I.Q. 70–89 (92*).	Feeble-minded. I.Q. 50–69 (80*).	Imbe I.Q belov (42*
	Per cent.			
Partly or wholly self-supporting	78	39	12·5	2
At home, unemployed	9	15	20	29
In epileptic institutions	4	27	26	—
In other institutions	—	10	27·5	45
Dead	9	9	14	24

inconclusive. Similarly the presence of a fam history of epilepsy or insanity seems to have lit influence on the social outlook.

There are 26 cases of hemiplegia in the seri These patients have a heavy additional physi handicap, and it is not surprising to find that o three of them are in the self-supporting group.

Ineducable Children.

For the most part children remain at the Colo school until they attain the age of 16. They m leave before that age for a variety of reasons. T school authorities may discharge a child, as explai above, because he is incapable of further educati and he should then be dealt with by the appropri mental deficiency authority. As a matter of fa out of 37 cases in the present series discharged dur their school career as ineducable, less than one-th are in mental deficiency institutions. One-quar have died, and the remainder are either at home in some other form of institution, not one of th being able to contribute in any degree to his o support.

Promising Cases.

At the age of 16 it is the policy to discharge their homes children whose fits are infrequent or h been arrested altogether, and whose intelligence a temperament are near enough to the normal to ena them, in our judgment, to earn a living. Sixty-th children in this series were discharged on these grou 55 of whom are now wholly or partly self-supporti One has died, four are out of work, three have back to epileptic colonies, but none are in me hospitals, mental deficiency, or poor-law institutio It may be claimed, therefore, that authorities residential schools are fair judges of social efficienc

Cases Recommended for Notification at the Age of Sixt

In other cases the parents are advised tha transfer should be made to one of the adult ho at Lingfield or at another colony for epileptics, where occasion demands it, notification to appropriate mental deficiency authority is rec mended. Unfortunately these recommendations frequently disregarded. Parents prefer that child should return home, while certification under Mental Deficiency Acts is not carried out, becaus the deplorable lack of institutional accommodat for defective epileptics. Certification will no do become more common under the new Act which all certified cases to remain at their homes under su vision, but for epileptics this is a doubtful bless for of all classes of certifiable or certified me defectives, probably they stand most in need institutional treatment. There are in this se 48 cases where notification to mental deficie authorities was recommended at the age of 16, less than one-third of them are in mental deficie

stitutions. One-quarter have died, and the remainder e either in other forms of institution or unemployed home, and among the 48 only one is able to contri- te, and that slightly, to his own support.

Methods of Inquiry.

This investigation was carried out by inquiries dressed to the patients themselves or to their rents in the first instance. Failing a reply from this irce application was made to local education or or-law authorities, who, in many cases, were good ough to go to considerable trouble to follow up the ildren. The reading of the letters and reports ngs one into very close touch with the life of leptics and their relation to the community. The esence of an epileptic in a home often means happiness to the family. Many letters testify to s, and go to show the inadequacy of our present rangements for meeting the need. Extracts from o letters and a report may be quoted here. The ters refer to children who had been discharged from ngfield as incapable of further education.

"I am sorry to say she is getting worse every day and y violent in her temper, she has got me, also her father ised and scratched and pieces took out of us. She is ly getting too much for us. We have tried everything to if she could alter her fit of passion, but we can't, so our tor said she will have to go away because my health is ing too bad. They took her to our mental hospital on Xmas e but brought her back, she wasn't bad enough for there."

"... his mental condition is much worse, also the fits ut 40 or 50 a month, he is in bed days at a time, he is ome with us, we have tried at quite a number of homes such cases but we have not been able to get him in where, as I have four other children he is getting past management as he has grown quite a big boy."

The report is of an intelligent girl, who at her ther's request left here at the age of 16. When her ther realised her mistake she was advised to apply the local guardians to place the girl in a home for leptics.

After the girl came home from Lingfield the mother lied to the Guardians but they placed her in a ward n blind senile old women and she was so unhappy that was taken home again after a few days. Her mother sed to consider the idea of reapplying, but there does seem any other means of solving the difficulty."

Such letters and reports are not at all uncommon in s series.

Conclusions.

This investigation shows that the death-rate rises y rapidly after children have left a residential ool for epileptics. Rather more than one-quarter ome wholly or partly self-supporting, and this up contains a large proportion of those whose lligence was high and fit incidence low at the time y left the colony. About 1 in 7 of the cases are ing at home without employment of any kind. st of these would be better cared for in institutions, l many of them, especially the lower-grade cases, urgently in need of institutional care.

Over 40 per cent. are in institutions. Most of those poor-law institutions would probably be more ably placed either in epileptic colonies or in ntal deficiency institutions. Doubtless some of lower grade cases in epileptic colonies should be lt with under the Mental Deficiency Acts were able accommodation available for them.

Epilepsy is usually a lifelong disease, which carries n it marked social handicaps. Its victims, in our ntry, run into many thousands. Few would be nd now to endorse the teaching of Gowers that epsy is one of the diseases most amenable to tment by drugs. Both before and since the time Gowers there has been much laborious research into causation and nature of the complaint, but with e definite outcome. Failing advances in therapy, pirical or based on more extended knowledge of underlying pathology of epilepsy, it behoves us nquire what is the social treatment meted out to various classes of epileptics, and along what lines y can be most happily and effectively dealt with. such an inquiry the present paper is intended to be nall contribution.

Clinical and Laboratory Notes.

A FATAL CASE OF POST-VACCINAL ENCEPHALITIS.

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AND
R. ODDIE, B.M., B.CH. OXF.,
HOUSE PHYSICIAN TO THE HOSPITAL.

IN the case under review the exact relationship of the fatal illness to the preceding vaccination is very obscure. Other cases have been observed and are being investigated, but this one is recorded now since it shows unusual features of special interest. We use the term encephalitis for convenience rather than in any narrow specific sense.

History of the Case.

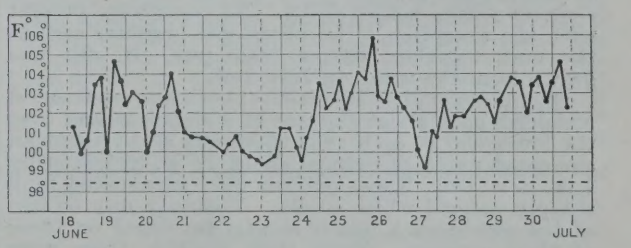
S. C., female, aged 9 years. Admitted to St. Thomas's Hospital June 18th, 1928. Died July 1st.

Apart from an attack of chicken-pox at the age of 7 years, this child's previous history was unimportant. She had not been previously vaccinated. Vaccination was performed by Dr. C. J. E. Edmonds on June 5th, and took a normal course. On June 12th she was sent home from school on account of headache and dizziness and she vomited once. The headache persisted, she became drowsy, and on the 15th vomited. Thereafter she was confined to bed. On the 16th her condition was unchanged, but the temperature rose to 102·5° F. and she vomited again. On the 17th her temperature rose to 105° F. Retention of urine occurred for the first time, and from that day onwards regular catheterisation was required.

She was seen by one of us (A. E. R.) on June 17th. She was then practically unconscious with a flushed face, pulse 128, pupils small and reacting to light. She could not be made to talk, but did put out her tongue when asked. Pharynx, heart, lungs, and abdomen were normal. Both knee-jerks were absent but there was an extensor response in the right big toe. The abdominal reflexes were absent. There was no retraction of neck and no rigidity of neck muscles. Temperature at 11 P.M. was 103° F.

Condition on Admission.—She was admitted into the hospital on the following day, June 18th. Chart 1 gives a record of her temperature up to the time of her death. She was practically unconscious on admission but could just be roused and did murmur her name. Her condition

CHART 1.



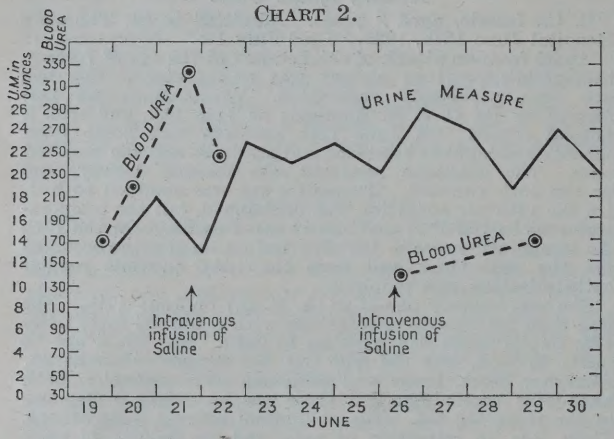
was the same as on the previous day, although now an extensor response was present on both sides. Her legs were flaccid and painful stimulation only evoked slight contraction of extensor muscles of thighs. Arms were slightly spastic and responded more readily to stimulation. Her eyes were half closed. No paralysis of ocular muscles was observed and the optic discs were normal. Tongue furred. Her pulse was rapid throughout, generally speaking between 120 and 140. Respirations varied from 24 to 40. No changes developed in the cardiovascular system, lungs, and gastro-intestinal system.

She remained in practically the same condition until her death. At the best she was profoundly lethargic when not absolutely comatose. At times, however, a slight glimmer of consciousness did return. She appeared, for instance, to recognise her parents and murmured "mother," and one day asked for a drink. Her position hardly varied from day to day. She never moved her legs at all and they were quite flaccid throughout. Her arms were slightly spastic, the left more so than the right. They were, as a rule, pressed across her chest, but if they were displaced she would slowly bring them back. Only on one or two occasions

was there any indication of voluntary movement of arms Her head was usually slightly inclined to the left, but there was no conjugate deviation of eyeballs. If the head were displaced to the right it would in time make its way back to the left. At times there seemed slight rigidity of the neck muscles. Her eyes were never closed, leaving a gap of about an eighth of an inch, which was probably the cause of a slight corneal ulceration. Independent movements of eyeballs took place. The child lost flesh, but did not become emaciated, weighing 42 lb. at death. The urine was free from albumin on admission, but a trace appeared after a few days and a few pus cells were observed. Leucocyte count 5400.

Lumbar puncture was performed on June 19th, 27th, and 30th; there was no increase of pressure and the fluid was quite transparent. Its urea content was very high, 180 mg. per cent. Owing to the fact that in some cases a high blood-urea had been recorded, this was investigated on June 19th, although the urine was then free from albumin. The urea was found to amount to 170 mg. per cent. Six estimations of the blood-urea were made by one of us (R. O.), and the records are shown in Chart 2, which also

CHART 2.



shows the daily volume of urine excreted. In view of the high urea concentration an intravenous infusion of 1 pint of saline was given on June 21st, and again on June 25th, with temporary benefit. Rectal injections of normal saline were administered every eight hours, but these had to be discontinued after three days, as they were not retained. The percentage of urea in the urine was 3·5 on June 21st and 4 per cent. two days before death. No casts were present with the exception of an occasional granular cast at the end, together with a little pus. *B. coli* was grown from the urine on July 2nd.

On admission, the inner side of both knees presented a reddish spot about the size of a sixpence, and over the lower end of each tibia there was also present an elongated patch of redness about 1½ in. in length by ½ in. in width. These patches were surrounded by a sharply defined white areola. Within a day or two of her admission a blister slowly developed on three of these patches. From their position these were explainable as the result of pressure, those on the knees being situated exactly where the knees come into contact when the legs are lying side by side and those lower down where the legs naturally cross each other.

Treatment.—As it was almost impossible to get her to swallow anything, the child was fed throughout by the nasal tube. She was put on hexamine grs. v. three times daily for ten days. She was also given an injection of 0·3 g. of stabilarsan on the day of admission.

The *post-mortem examination* was performed by Dr. J. F. Taylor, who contributes the following notes:—

The brain showed no definite increase of cerebro-spinal fluid. The fluid was clear and no meningitis was present. The convolutions were normally defined. General congestion of surface vessels was noticeable, rather more marked at the base. Sections through all parts of the hemispheres, mid-brain, cerebellum, &c., showed congestion but no hæmorrhages. No areas of softening were to be detected. The spinal cord presented a similar appearance.

The kidneys weighed 4½ oz. They were congested; capsules stripped readily, and there was no obvious inflam tion. The bladder contained turbid urine and sho signs of recent cystitis. Nothing abnormal was detecte the remaining organs and the vaccination scabs were norn Microscopical examination was made of portions of cor basal ganglia, crura cerebri, pons, medulla, cervical lumbar cord—with almost negative results. A mode congestion was found, but no perivascular or dif infiltration. No hæmorrhages, thromboses, or other pat logical changes were observed. The condition of kidneys was interesting, though evidence of definite nephr was very scanty. The glomeruli were slightly swollen showed a multiplication of nuclei, and there was s cloudiness and swelling of the tubular epithelium. curious feature was the deposition of minute collection calcium salts in many of the convoluted tubules.

Remarks.

Two other children in the family were vaccinat at the same time as this one. A sister did not ta but a brother went through a mild illness from wh he has made a good recovery. He was vaccinated the same day, June 5th, and on June 14th and several days afterwards, he was out-of-sorts, feveri and drowsy, with occasional vomiting, sympto which it is not unreasonable to suppose represent a mild attack of the same illness from which t patient died.

1. The patient suffered from a short febrile illne the earliest symptoms of which appeared on June 12 seven days after vaccination, and death occurred July 1st after an illness of 19 days.

2. The main symptoms were indicative of a p found disturbance of the nervous system. T striking clinical feature of the case was the profou lethargy, and we would emphasise the remarka immobility of this child throughout her whole illne Seen day after day, she lay in exactly the same positi with the same slightly flushed cheek and sligh open eyes, giving no indication of life whatever ot than her faint respiratory movements. She ne moved her legs at all, and her arms were almost motionless. Lethargy is, of course, a well-kno feature in some cases of encephalitis, but the profou immobility of this child was very striking.

3. The scanty pathological changes in the br and spinal cord are noteworthy. The post-mort examination revealed nothing more—both to nak eye and microscopical examination—than gene congestion.

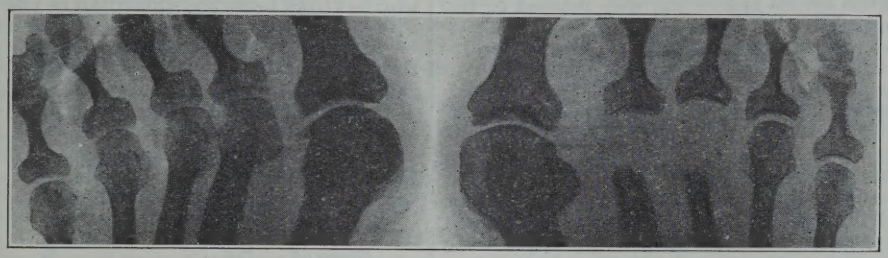
4. Marked urea retention. The blood-urea v 170 mg. per cent. at the first estimation; it rose high as 318 on June 21st, and three days bef death it amounted to 170. The cerebro-spinal fl also showed a high percentage of urea, 180 mg. cent. on June 19th. This marked retention of ur together with profound coma, naturally suggest uræmia, but the percentage of urea in the urine two estimations amounted to 3·5 and 4 per ce and at the beginning the urine was absolutely f from albumin, nor was there at any time m albumin than could be accounted for by the n cystitis. Dr. Taylor's report on the microscopi condition of the kidneys shows, moreover, an abse of any real nephritis. The high urea percentage m therefore, arise in some manner hitherto unsuspect We conferred with Dr. O. L. de Wesselow on this poi and he suggested that it might be due to desiccat of the child, coupled, perhaps, with increased me bolism. Some loss of flesh certainly took place, l death occurred before any real emaciation. T high concentration of urea in the blood has b noted in other cases, but it would appear from o that it may occur without any convincing evide of nephritis.

The absence of any gross changes in the br characteristic of encephalitis may, on the ot hand, lend support to the view that the sympto were more allied to those of uræmia, and due t failure on the part of the kidneys to fulfil th functions, despite the absence of gross evide of nephritis. Further observations on similar ca may throw light on this curious feature.

CASE OF PERSISTENT METATARSALGIA
TREATED BY OPERATIVE MEASURES.

By R. Brooke, M.B. Lond., F.R.C.S. Eng.,
HON. ORTHOPÆDIC SURGEON TO THE ROYAL WEST SUSSEX HOSPITAL.

TRUE Morton's metatarsalgia with dropping of the nterior arch of the foot can be treated very satis-ıctorily and with good results by the usual ortho-ædic corrective appliances. Now and again, however, ases do not respond to these more simple methods of reatment. n example detailed elow, with ıe method sed to vercome he de-ormity.



Radiogram showing portions of metatarsal bones removed at operation, and condition of corresponding bones on other side.

An unmar-ed woman, ged 42 years, ıvea history pain, neur-gic in type, ı the dor-ım of both et and in the balls of the second, third, and fourth toes. The ain had persisted for three years and was progressive, in spite treatment by various doctors who had supplied her with etatarsal bars to her boots and various forms of arch ipports. On examination the patient—a not unduly eavy or fat woman—was found to have marked bilateral opping of the anterior arches with hallux valgus. There as some tenderness on pressure on the under-surface of ıe balls of the second, third, and fourth toes, more marked the right foot than the left. Both feet were quite soft ıd supple and X ray examination revealed no arthritic anges. She was measured for, and supplied by an instru-ent maker with, a pair of boots of the correct size and a pair of transverse arch supports. Supplementary treatment consisted of massage, radiant heat applications, and foot drill three times a week.

At the end of two months the condition was unimproved. In fact, her feet were if anything rather worse than they were before. It was therefore decided to operate. Using Esmarch's bandages and a tourniquet, the operation was practically bloodless. A small semilunar incision was made on the dorsum of the right foot (the worse foot) half an inch proximal to the junction of the toes with the foot. The skin flap thus formed was turned upwards. The extensor tendons were then exposed and retracted out of the way, bringing into view the second and third metatarsal bones. The capsules of the metatarso-phalangeal joints were then opened, and the heads of the metatarsal bones, freed from surrounding structures, were removed by cutting through the shafts proximal to the heads with bone-cutting forceps. The tendons were subsequently replaced and the wound closed. The operation took only a few minutes. Ten days later the patient was walking about in comfort with transverse arch supports in her boots and without a stick. At the present time, three months after operation, the right foot is entirely free from pain, and she is asking that the other foot should be similarly treated.

Although in this operation the transverse arch of the foot was permanently weakened, the end-results seem to have justified the means taken. The small amount of arch which the patient had before the operation is now more than reconstituted by the mechanical arch support which she is wearing, and—what is more important—she is free from pain.

DIPHTHERIA AND THE "PROTECTIVE" POWER OF SERUM.

By John Gordon, M.D. Leeds, D.P.H.,
AND
Jack Science, M.D. Leeds, D.P.H.

(From the Department of Pathology and Bacteriology, University of Leeds, and the City Infectious Diseases Hospital, Seacroft.)

IN a previous paper[1] describing a study of 25 cases e showed that serum from patients suffering from phtheria may be deficient in the property of pro-cting red blood corpuscles from the hæmolytic tion of sodium ricinoleate, a property normally esent in human serum. The marked hæmolytic tion of sodium ricinoleate on red cells is markedly minished on addition of serum, and this action rotective action) of serum has been attributed by . Ponder[2] to the protein components of serum. It as shown that this protective power returned in mple uncomplicated cases of diphtheria by the end the third week. While in a few cases of diphtheria veloping paralysis there was no marked interference ith the protective power of the serum, in most cases diphtheria where paralysis occurred this diminished otective power lasted for some time and even up 80 days, and it was suggested that the protective wer of the serum of a patient with diphtheria ould be tested against a hæmolysin at different ages of the disease, and compared with a normal rum with a view to assisting prognosis with regard the possible development of paralysis.

In this paper a further series of 50 cases of diphtheria ere examined with a view to confirming and extending the previous observations. The experimental details were the same as in the previous paper.

The patients were bled from the arm and the serum separated. The serum was tested as soon as possible on the same day, being kept in the refrigerator till required. The test was carried out in the following way: to each of three narrow tubes were added 0·5 c.cm. of the patient's serum, and to three other tubes 0·5 c.cm. of a healthy person's serum. To tube 1 was added 0·1 c.cm. of a 1 per cent. solution of sodium ricinoleate in normal saline; to tube 2, 0·2 c.cm.; and to tube 3 was added 0·3 c.cm. The mixtures were shaken and allowed to stand at room temperature for half an hour. Then 0·2 c.cm., 0·1 c.cm., and 0·05 c.cm. were taken from each tube and added to 0·5 c.cm. of a 3 per cent. suspension of washed ox blood cells. These were put in the incubator at 37° C. for one hour, and then the varying degrees of hæmolysis were read.

Amount of 1 per cent. sodium ricinoleate added to 0·5 c.cm. serum.

—	0·1 c.cm.			0·2 c.cm.			0·3 c.cm.		
	c.cm. of mixture.								
	0·2	0·1	0·05	0·2	0·1	0·05	0·2	0·1	0·05
Patient's serum	††	–	–	†††	†	–	††††	†††	–
Control serum	–	–	–	–	–	–	†	–	–

†††† = complete hæmolysis. ††† = almost complete hæmolysis.
†† = partial hæmolysis. † = trace of hæmolysis.
– = no hæmolysis.

The patient's serum showed marked lack of protection.

An example of the reading obtained from a case of diphtheria that developed palate and ocular paralysis is here given. The blood was taken on the twenty-fifth day of the illness.

Fifty consecutive cases of diphtheria were tested, including cases of moderate and severe throat lesions

[1] Quart. Jour. Med., 1928, xxi., 345.
[2] Ponder, E.: Proc. Roy. Soc. B. London, 1923, xcv., 42; id., London, 1925, xcviii., 484.

Of these 39, or 78 per cent., showed complete protection by the second to the third week, and these cases did not develop paralysis. Of the remaining 11 who showed lack of protection prolonged beyond the third week, 8 developed paralysis. In one of the cases developing paralysis, lack of protection continued up to five weeks after the onset of the disease.

This series of cases, taken in conjunction with the 25 already described, indicate that a knowledge of the protective power of the serum about the third week might be useful in assessing the possible development of paralysis in a case of diphtheria, from which the ordinary clinical symptoms have already disappeared, the probability being that this lack of protection of the serum is in some way related to the action of the diphtheria toxin.

Public Health Services.

LIVERPOOL PORT SANITARY AUTHORITY.

In his report for 1927 Dr. A. A. Mussen mentions 5644 visits of inspection paid to ships, of which 948 (930 last year) had nuisances on board; there were 3297 (3099) dirty forecastles and 409 (254) foul water-closets. The men are being more considered; the Board of Trade, the Port Sanitary Authority, the unions, the shipping companies, all coöperating. Quarters are being put at the after-end of ships, cubic space is being increased, bunks are better, vermin-proofing better, washing places more usual, hospital accommodation more frequent, and, thanks in large measure to the Board of Trade, food is much better. But plans of new ships should be approved by authority, and when as much attention is given to the health of seamen as to that of any other section of the community, standards of accommodation will be international. Cleanliness of crew spaces depends on discipline and should be examined daily. Of 38 cases of enteric fever mentioned as occurring in voyages that brought ships to Liverpool, 34 were in seamen; of 18 cases of dysentery 12 were among the crews, 1 was a military passenger, the other 5 were "distressed British subjects." Of tubercle 59 cases were landed (origin unstated) this year, and two cases of encephalitis lethargica. No cases of plague, cholera, or yellow fever were landed. The prevalence of these diseases through the world in 1925–27 is stated with a most interesting map. Plague was an anxiety in 1927 in the Indian Ocean, Levant, West Africa, and South America; cholera in the Indian and China seas; yellow fever in West Africa, Rio, and there were single cases reported in Bangkok and Rangoon, a very important matter if the diagnoses were beyond cavil. Plague is being constantly watched for; the docks are made as nearly rat-proof as possible, ships from suspected ports are searched for rats; 6781 rats from ships and quays were pathologically examined and all were plague-free.

The seamen's dispensary served more patients in 1927, fresh cases 1842 (1360), total attendances 55,063 (41,720); evening clinics are now held twice a week. Cures are reported, 421, "an improvement of 80 per cent."; as last year, of every 10 cases 6 were gonorrhœa, 3 syphilis, and 1 soft chancre, but gonorrhœa cases are apt to delay attending till they have become chronic; 20 per cent. of the syphilis cases are in the pre-Wassermann stage. Of 20,121 alien arrivals examined to see if they have any disease dangerous to the public health or likely to cause a public charge, 6 were certified, 3 for venereal disease, 2 for mental deficiency, 1 for phthisis. Medical officers of the Board of Trade inspect all emigrants, second class or steerage, and crews of vessels bound for America. There were 123,801 emigrants and 16 were rejected for infectious disease. Of 80 cases of trachoma or conjunctivitis 77 sailed later; 3 returned home.

The recent regulations in regard to preservatives in food and imported food seem to work well, for there are no complaints of difficulty. Far less unsound food had to be condemned and "utilised under supervision" this year, 2621 (5482) tons, although the amount is still enormous. Everything is done to ensure that the functions of the port medical officer shall be effectively discharged with the least possible delay to ships. Now that, owing to the opening of the new Gladstone Dock, vessels can enter the dock at all states of the tide, a medical officer is on duty day and night to deal at once with infectious disease. Ships from infected ports can be promptly dealt with as the authority has a new motor launch with a speed of 11½ knots, and good accommodation for crew, medical officer, and four patients on the way to hospital. It is named the *Moyles*, after Dr. J. G. Moyle, who has long been the chairman of the port authority.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

The following are some of the 1927 statistics of the Scottish and five English towns:—

Name of district and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality
Edinburgh C. .. (425,147)	17·9	14·3	1·20	1·68	2·4	1·8	80/33	5·5	6
Paisley B. .. (87,010)	20·6	13·1	0·99	1·33	2·3	1·9	90/44	7·2	5
East Ham C.B. .. (146,900)	15·8	9·7	0·93	1·19	2·0	1·5	53/—	3·4	5
Coventry C. .. (129,500)	15·9	10·9	1·07	1·20	2·2	1·1	63/37	4·3	4
Halifax C.B. .. (96,270)	13·8	16·4	1·00	1·64	3·1	2·6	90/51	6·7	7
Great Yarmouth C.B. (58,500)	16·0	13·6	1·11	1·45	2·1	1·8	62/31	3·2	1
Dover B. .. .. (39,530)	18·7	12·4	1·29	1·59	2·8	1·7	44/18	2·6	3

C = City. C.B. = County borough. B = Burgh or Borough.
— = No information.

Edinburgh.

Dr. William Robertson, referring to the reduction in infant mortality, says improved housing conditions ought to save many more lives of children. For whole-time lady clinical medical officers have been appointed in order to get into more intimate and personal touch with the mothers in the various districts of the city. An effort is also being made to provide instruction in cookery and the preparation of nourishing meals with rudimentary apparatus. The fact that there must be a delay in the provision of good houses is felt to be no reason for the delay in the provision of good food. A beginning has been made with the St. Leonard's slum clearance area and the dispossessed tenants will have accommodation provided on the Prestonfield housing site. The contrast between the old and the new housing conditions is well illustrated by photographs of St. Leonard's ward and of a model of the lay-out of the Prestonfield housing scheme. The hugeness of the Edinburgh housing problem is brought out by the fact that of 104,488 inhabited houses there are 7328 single-room habitations and that there are approximately 12,000 houses with rentals below £10 and 22,922 with rents between £10 and £15. This means that many tenants accustomed to pay small rents have to be induced to pay higher rents. Dr. Robertson emphasises the relationship between an excessive death-rate from tuberculosis and the prevalence of the bad type of house in certain of the wards.

During the year out of 219 deaths caused by epidemic diseases 114 were due to whooping-cough and measles, and here again the new housing method

king the place of old town properties, consisting of , 12, or even more houses branching off each common ir, ought to gradually produce a great result. The munisation scheme against diphtheria makes good ogress. There has not been one bad result and in e overwhelming majority of children the injection ver causes a moment's discomfort. Among 11,608 ldren, 7608 of whom were immunised and 4000 of om were Schick-negative, there occurred 58 cases diphtheria, but not a single death. During the ir years 1924 to 1927 there were 2741 notifications diphtheria with 242 deaths. Full particulars are en in the report of the circumstances under ich the 58 mild cases of diphtheria occurred among e immunised or partially immunised children.

Dr. Robertson expresses his regret that the House Commons rejected the Edinburgh proposal to force the treatment of sufferers from venereal eases. The patients who ceased treatment before ng cured numbered 985 during 1927, giving a centage of defaulters to the total cases treated of 8—somewhat higher than in the previous year. e Scottish Board of Health estimates the percentage default by the ratio of defaulters to the total cases ving the centres for any reason and by this method percentage of default in Edinburgh was 32. ery effort is made to follow up patients, by letters the case of males and by visits from an almoner in case of females. The almoners' task is a thankless as frequently, after several visits, she secures the urn of a patient for treatment to be followed again a subsequent default.

Tribute is paid to the valuable work done by unteers in connexion with the maternity and child fare scheme. Dr. Robertson makes special erence to the five childs' gardens which are subsi-ed by the corporation and to the nurseries, which provided to enable the mothers to attend the kery demonstrations. A special investigation of ving-brushes has shown that such brushes may be ected with a bacillus resembling the bacillus of hrax. Attention has also been given to improving technique of the virulence test of the diphtheria illus, and it is claimed that an intracutaneous t gives a satisfactory and more rapid result.

The cows stalled in the city number 3732, and ing the year 26 were dealt with under the Tuber-osis Order. Of these 15 had tubercle of the udder, uberculous emaciation, and 8 a chronic cough with er evidence. In 10 cases the udder infection was gnosed by microscopical examination, and in ore by the biological test. In addition to these 26 cows came under suspicion as the result of the tine examinations. These animals did not come hin the scope of the Tuberculosis Order, but the ners were persuaded to remove them from the ry herds. The incidence of tuberculosis among the ry cows of the district, as judged by post-mortem ults at the abattoirs, showed no material change en compared with former years; out of 1585 cows ughtered 43 per cent. were affected with tubercle. e tubercle-free herd of about 50 cows run in nexion with the Royal Victoria Hospital had no ctors at the half-yearly testings. The samples of side milk examined for tuberculous infection mbered 122, and 7 of these gave a positive result.

Paisley.

Dr. G. V. T. McMichael estimates the houses required the end of 1927 at 947. The municipal houses ctioned by the Board of Health number 2010, of ich 1306 have been completed and occupied. spite the encouraging progress made with housing emes the clamant problem of the slum dwellers, o cannot afford to pay the rents of corporation uses, has not been faced. Dr. McMichael suggests these two- and three-roomed houses built in ee-storied tenement blocks and of the simplest sible character. He definitely opposes the erection any one-roomed houses, of which there are already many. It is, in fact, the high proportion of one- l two-roomed houses which makes the domiciliary treatment of the respiratory diseases, including tuberculosis, so difficult in Paisley. During 1927 412 cases of acute primary and influenzal pneumonia were treated in the three hospitals. The case fatality in the fever hospital was 15·6 per cent. and in the Royal Alexandra Infirmary 13·5 per cent.; whilst among the 149 cases treated at home the case mortality was 34·2 per cent. The new probationers at the fever hospital are subjected to the Dick and Schick tests and immunised if necessary.

The Russell Institute, opened in March by H.R.H. Princess Mary, provides in an up-to-date manner for the various municipal health services, including artificial sunlight, X rays, a dental and a remedial exercise clinic. The public has shown an extraordinary interest in the institution and 10,000 people passed through it on the one day when it was opened for inspection. Dr. McMichael is enthusiastic as to the result of light treatment both for rickets and practically all types of surgical tuberculosis, though he is much disappointed at the irregular attendance of the mothers, whose children suffer from rickets. The antenatal work makes good progress and is largely helped by the beds available for antenatal cases at Barshaw Hospital. During 1927 525 mothers attended the antenatal clinics and 206 antenatal cases were admitted to Barshaw Hospital. The total births numbered 1791.

East Ham.

Dr. W. Benton refers to the inadequacy of the isolation hospital. As far back as 1914 this matter was considered and plans were prepared and submitted to the Ministry, but the outbreak of war stopped further progress. In 1922 the Ministry made certain suggestions for temporary improvements and for the preparation of a complete scheme to be carried out in stages as circumstances permitted. Much of the accommodation is of a temporary nature—e.g., military huts. According to the usual standard per 1000 of the population there should be 150 beds, whereas without overcrowding there are only 100. The report shows that at present there is overcrowding to the extent of 40 beds. During 1927 epidemic prevalence of diphtheria and scarlet fever put pressure on the hospital. Over 10 per cent. of the scarlet fever cases admitted were also infected with diphtheria. Scarlet fever antitoxin was used for 20 patients with severe septic and toxic symptoms and, with one exception, the results were highly satisfactory. The persistence of nasal, pharyngeal, and aural complications has given trouble. There is the usual complaint of delay in giving antitoxin for diphtheria. The average duration of illness of 27 fatal cases prior to admission to hospital was four days, and the successful use of antitoxin at this stage is hopeless. Towards the end of the year diphtheria assumed an unusually septic and toxic type. Of the 30 fatal cases of diphtheria 23 of the deaths occurred under 8 years of age. Six members of the staff contracted diphtheria and two scarlet fever. Prophylactic immunisation has not yet been adopted.

The staff of health visitors has been brought up to the level of five years ago by the belated filling of a vacancy, but Dr. Benton points out that a further increase of staff is needed in order to cope with the supervision of the pre-school child. He summarises the needs of East Ham children as follows: (1) A more intensive health campaign with regard to the pre-school child (already good work is being done for these children at the aural, dental, and ophthalmic clinics). (2) Practical and interesting instruction in hygiene in the elementary schools. (3) The erection of a day open-air school to accommodate 500 children. (4) The provision of a special school to accommodate 200 physically defective children. (5) The improvement of home conditions, especially in the direction of reducing overcrowding.

Coventry.

Dr. E. H. Snell mentions that during the latter half of the year there were two sharp outbreaks of diphtheria, each associated with a large school. In a

special report in September he recommended his committee to consider the question of providing immunisation facilities, and the consideration of the report was deferred until the medical staff had been strengthened by the appointment of an assistant medical officer of health. There were 14 notifications of encephalitis lethargica and seven deaths attributed to it. During the last nine years there have been 130 notifications and 56 deaths from this disease. The antenatal clinic is conducted by a gynæcologist, Dr. S. A. Ballantyne. Of the 265 cases seen 160 were maternity cases booked for the Coventry and Warwickshire Hospital and 45 booked for the Gulson-road (poor-law) hospital. Of the remainder 43 were sent by midwives, 10 came of their own accord, and 7 were not pregnant. The total births numbered 2065. The Council paid £1201 for maternity cases sent to the two hospitals mentioned and received back in contributions £696 16s. 6d. The chief health visitor, Miss Barratt, has been appointed infant protection visitor by the Coventry guardians. It has again been impossible to operate the sections of the Housing Acts relating to the closure of unfit houses, owing to the absence of alternative accommodation. In referring to the close association of the school medical and infant welfare services Dr. Snell emphasises the desirability of providing some leisure for the medical members of the staff to engage in research. The open-air residential school, situated on high ground about five miles from the city, has been rebuilt to accommodate 90 children, and was officially opened by the mayor in July. The day open-air school held on part of the roof of the Centaur-road school was much interfered with by the wet weather of 1927.

Halifax.

Dr. Cyril Banks says the issue of his report has been delayed owing to the full energy of the health department having been concentrated on the suppression of small-pox. During the year 1927 there were "three invasions" of the town by small-pox, amounting in all to 12 cases with no deaths. For the first time since 1921 the Registrar-General has estimated a slight increase in the population. The death-rate was higher than usual owing to a sharp outbreak of influenza in February and March. The deaths attributed to influenza numbered 65. The infant mortality-rate was 11 higher than in the previous year, and Dr. Banks discusses the reasons for the high neonatal and maternal mortalities from childbirth. Dr. Banks considers that the difficulty with regard to smoke from domestic chimneys need no longer exist. From his experience "Coalite" produces bright, clean, hot fires with no smoke, no dirty kettles and pans, and no need for the chimney sweep. The orthopædic scheme under the direction of Mr. F. W. Goyder, F.R.C.S., has done excellent work. Of the 44 cases under the school age treated 34 were rickets. Of the 222 of school age 62 were cases of flat-foot, 56 of stoop, 32 of lateral curvature, 11 of infantile paralysis, 11 of rickets, 6 of infantile hemiplegia, 5 of torticollis, and 4 of Erb's paralysis. Mr. Goyder points out that the staff of the clinic needs to be increased and that another masseuse should divide her time between the clinic, the schools, and the maternity and child welfare centre. In order to help the work a lamp for ultra-violet radiation has been installed at the Northgate centre.

Great Yarmouth.

Dr. A. N. Stevens draws attention to the fact that 50 per cent. of the deaths in the town during the year under review occurred at ages over 65, and 32 per cent. at ages over 75. The total rainfall was 31·96 in. and the hours of bright sunshine 1513·7. In discussing the work of the tuberculosis dispensary Dr. Stevens refers to the difficulty of getting contacts to submit themselves for examination. The notifications in 1927 numbered 133 and the average for the preceding five years was 87, but the number of contacts examined during 1927 was only 21. There are still 24 wells in the borough, many of which "are without doubt liable to pollution at times," but Dr. Stevens thinks that "unless t samples for analysis happen to be taken at one such times" these wells cannot be dealt with. T new houses erected numbered 348 of which 2 received State assistance. Under the new milk regul tions general shopkeepers are only to be permitted sell milk in sealed bottles.

Dover.

Dr. A. B. McMaster records a severe epidemic influenza in the first quarter of the year. At the e of 1927, after revision, the tuberculosis regist contained 356 pulmonary and 99 non-pulmona cases, the two sexes being in about equal proportio The tuberculosis notifications numbered 91 and t deaths 51, so that the names on the register are fi times the notifications for the year and nine times t deaths. Since the new scarlet fever antitoxin ca into use at the isolation hospital (in 1926) the numb of complications and the duration of stay at t hospital have been reduced. Dr. McMaster poi out that the number of cases is too small to dr general conclusions from, but that the facts a suggestive of the value of the new antitoxin. T senior sanitary inspector attended the "clean milk course at Wye Agricultural College. Greater use being made of the hospital beds provided at t Royal Victoria Hospital for complicated materni cases.

MENTAL HOSPITAL REPORTS.

THE annual report of the *City of Birmingh* Asylums Committee is of particular interest t year, as it opens with a report, from the chief medi officer, of the medical work in both institutio The principal feature is an inquiry into the rava of physical disease, particularly focal sepsis, amo mental patients. Oral sepsis was found in 77 cent. of the 531 cases admitted, and many of t remaining 23 per cent. were edentulous, so that really healthy mouth was rare. The common type of septic mouth was gross suppurating pe odontitis. Septic conditions of the ears, throat a air passages were found in half the patients, and 1 out of 180 examined revealed evidence of infecti in one or more sinuses, while 40 had chronic suppu tive inflammation of the ear. Operations by t laryngologist numbered 174, and no patient appea to be worse after them, physically or mentally, wh improvement followed by discharge was often record Apart from the general toxic effect of these c ditions, it is possible that infection passes direc to the brain from the nose and throat; certain w on two cases of advanced epilepsy and mental d order has pointed to direct invasion of the cra cavity through diseased bone. The gynæcolog has also played his part in the detection of sep and has found T.A.B. vaccine useful for many resist cases of septic cervicitis. A review of the ætiologi rôle of influenza in mental disturbance sugge strongly that the virus plays a large part, both imm diately and after a delay of several months.

After this interesting medical summary the repo of the two mental hospitals seem more than usua statistical. At *Winson Green* there were 763 patie at the end of the year. The recovery-rate was 4 per cent., with an additional "discharged relieved rate of 11·1 per cent. More than half the patie admitted during the year were totally discharg 68 of them after a preliminary month's trial. T death-rate of 6·45 per cent. is the lowest in the hist of the hospital. Autopsy was performed in 84 cent. of possible cases. The extensive parole allow resulted in 12 escapes, but the superintendent rega the liberty as "well worth it." All were saf returned. The general health was very good a only two patients were under treatment for tub culosis at the end of the year. A number of ope tions for septic foci were performed and most them were followed by improvement, either direc or after a subsequent treatment by protein sh (T.A.B. vaccine). Nearly 100 patients receiv

ıock therapy, and in some cases their mental trouble as cut short by this means. Eight cases of general aralysis were treated by induced malaria; 3 were scharged "recovered," and 2 others improved. 5·5 per cent. of patients were usefully employed, the ajority in the grounds, laundry, kitchen, and sewing-ıom. Electric light is to be installed throughout ıe building. There is some difficulty in keeping ıe number of female nurses up to establishment.

At *Rubery Hill and Hollymoor Mental Hospital* ıere were 1815 patients at the end of the year, cluding 146 epileptics. Of the admissions during)27 nearly 15 per cent. were cases of general paralysis an advanced and debilitated condition. The covery-rate of 48·1 per cent. is therefore all the ore encouraging. Over 64 per cent. of all cases lmitted were totally discharged. The completion a special treatment block, including an operating eatre and electrical and hydrotherapy rooms, has ovided a most valuable adjunct to the care of the tients. Two bungalows are used as convalescent ards for women and a third will be available when a rses' home is built. The general health of the tients was good, and only three cases of tuber-ılosis were under treatment at the end of the year. ıere was no typhoid fever; this may be partly due the liberal use made of T.A.B. vaccine as a means inducing protein shock. A routine test for testinal organisms on admission showed that 25 r cent. of patients had had at some time a more less severe intestinal infection. Some of these come carriers and originate outbreaks of dysentery colitis in the institution. The medical superin-ndent makes the interesting observation that e deeper problems of mental disorder are also ose of rheumatism and rheumatic disorder—states low grade and chronic infectivity. The hydro-erapeutic department has therefore been augmented four tables for continuous colon irrigation and two ercury-vapour lamps. The malarial treatment of neral paralysis has been largely superseded by her forms of induced pyrexia, especially non-ecific protein therapy. To the stress laid on moval of focal sepsis the Visiting Commissioners tribute the striking absence of noise and unrest ong the patients; the removal of somatic irritation kes the place of sedatives. Parole on and off the ate is granted to over 200 patients, and most of ose discharged are previously sent out on trial. early 1000 patients are employed at trades or on e estate. Twenty-three male and 12 female nurses ve passed the final examination for the M.P.A. rtificate, 5 with distinction.

The *City of Cardiff Mental Hospital*, like the spitals of Birmingham, publishes its statistics in e body of the medical superintendent's report, so at the discussion of them is almost swamped by the bles. There were 660 patients on the books at the d of last March. Twelve and a half per cent. of e patients admitted were suffering from general ralysis. The death-rate was 11·8 per cent. and e recovery-rate 41·2 per cent. The general health s good and there were only five cases of tuberculosis, o of erysipelas, and one of scarlet fever. Autopsies re held in all cases where permission was given. e dental surgeon made 540 examinations; the næcologist made 63, and the laryngologist 142. search work has been continued on the distribution nitrogenous compounds in the plasma and ebro-spinal fluid, on cholesterol and glucose in e blood, and on the radiography of the alimentary ct. A series of films has been prepared showing aracteristic motor manifestations in mental disorder. o electrically heated ovens and a boiling table ve been installed to replace gas-cooking apparatus. e dietary has been improved. Among recent ditions to the equipment of the hospital is a fine wling green. Limited parole is given to 20 patients. enty-three men and 30 women nurses are certified registered.

The *Brighton County Borough Mental Hospital* at *Haywards Heath* had 847 patients resident at the end of the year and showed a recovery-rate of 39·37 and a death-rate of 8·6 per cent. There was a small epidemic of influenza in the spring, but no dysentery. Eighteen patients have tuberculosis. Over 50 patients have had full parole daily and another 50 have had parole in the grounds. Over 100 patients, mostly women, have attended weekly classes for country dancing and have benefited considerably. The women patients have formed a debating society; from their deliberations several suggestions for their comfort have arisen and many have been approved. Except in one ward all the women now have their own clothes, marked with their names, and they appreciate this very much. Twenty patients have been home for week-ends and eight men went home for Christmas. Over 50 have been allowed to visit Brighton, Eastbourne, and London for the day on parole; there has never been any trouble about return to hospital. Six wards have open doors. The Guardianship Society has given invaluable aid to discharged patients, finding them homes and employment. The out-patient clinic in Brighton has now treated 192 patients, only 12 of whom have had to be certified. The dental surgeon treated 690 patients during the year and extracted 694 teeth. Stress is laid on open-air treatment at this hospital. A cinema is being erected and a stable is being turned into a laboratory, while plans are being made for an admission hospital, which will meet the immediate threat of overcrowding. Sixty-five nurses are certificated or registered.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 1ST, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 102 (last week, 141); scarlet fever, 1376; diphtheria, 851; enteric fever 122; (last week, 153); pneumonia, 508; puerperal fever, 32; puerperal pyrexia, 89; cerebro-spinal fever, 4; acute poliomyelitis, 6; acute polio-encephalitis, 4; encephalitis lethargica, 27; continued fever, 2; dysentery, 6; ophthalmia neonatorum, 92. No case of cholera, plague, or typhus fever was notified during the week.

The following counties each notified 3 or more cases of enteric fever: London, 17; Berks, 3; Chester, 3; Devon, 4; Essex, 23 (of which Colchester 15); Huntingdon, 7 (of which St. Ives, U. and R. 6); Lancaster, 9; Middlesex, 7; Norfolk, 3; Sussex East, 3; Monmouth, 4; The total of 122 includes 42 cases of paratyphoid fever, of which 13 were notified in London and 6 in Huntingdonshire.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Sept. 4th and 5th was as follows: Small-pox under treatment, 7; scarlet fever, 1477; diphtheria, 1472; enteric fever, 112; measles, 118; whooping-cough, 244; puerperal fever, 14 (plus 7 babies); encephalitis lethargica, 71; poliomyelitis, 1; "other diseases" 20. At St. Margaret's Hospital there were 14 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns including London there was no death from small-pox, 6 (1) from enteric fever, 9 (0) from measles, 5 (5) from scarlet fever, 27 (3) from whooping-cough, 15 (1) from diphtheria, 86 (23) from diarrhœa and enteritis under two years, and 20 (4) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London were reported from Southend-on-Sea 2, Bolton, Manchester, and Salford, 1 each. Of the 9 fatal cases of measles, 2 each were reported from Wolverhampton, Liverpool, and Cardiff. There was no fatal case of scarlet fever outside London. Of the 24 fatal cases of whooping-cough outside London, 3 each were reported from Willesden and Leeds, while Glasgow reported 6 for the same week. Liverpool again reported 9 deaths from diarrhœa, Birmingham and Manchester 5 each, and Hull 4, while Glasgow and Dublin reported 6 and 8 respectively.

The number of stillbirths registered during the week was 250 in the great towns (corresponding to a rate of 36 per 1000 births), including 53 in London.

Reviews and Notices of Books.

THE OPIUM PROBLEM.

By CHARLES E. TERRY, M.D., and MILDRED PELLENS. New York: The Committee on Drug Addictions. 1928. Pp. 1042.

THIS work, though formidable in its dimension, is stated to be condensed from a report prepared under the direction of the Committee on Drug Addictions of New York, in collaboration with the Bureau of Social Hygiene. It presents a review of the literature of the Narcotic Drug Problem, drawn largely, but by no means exclusively, from American sources. It deals with the extent, development, ætiology, nature, pathology, symptomatology, and treatment of drug addiction, and finally discusses efforts at control of the commerce in opium and other narcotics, municipally, nationally, and internationally.

The probability that the Geneva Opium Convention of 1925, which implements The Hague Convention of 1912, will shortly come into operation, makes the appearance of this work opportune. By a review of standard works, treatises, and monographs, by questionaires directed to medical and administrative authorities, and by a digest of conventions, laws, and regulations, the authors have endeavoured to furnish students of the opium question with a "fairly composite picture of professional and official opinion and attitude of the day as to the medical and sociologic aspects of the problem." The authors are not prepared to confirm the assertion that the number of addicts in the United States exceeds a million, but are satisfied that their "surveys and estimates indicate sufficiently clearly the existence of a major medico-social problem" to be confronted. The early use of opium as an anodyne in Asia, its introduction into Western countries, and the discovery of its value for other than therapeutic purposes, the spread of the use of the hypodermic syringe, and the differentiation of the pharmacological properties of the alkaloids derived from opium are related. The view is expressed "that there are certain persons who, by reason of definite psychical characteristics, more readily become victims of the chronic use of the drugs"; but while discussing various attempts to elucidate the ætiology of narcotic addiction, the authors are not satisfied that a truly scientific explanation has yet been vouchsafed, and urge the need of further research into "the mechanism of the phenomena recorded." In a later chapter, however, the conclusion is reached that "there is no type which may be called the habitual user of opium," and that addiction is "not restricted to any social, economic, mental, or other group." In regard to treatment, the relative advantages of complete and partial withdrawal of the drug are stated, but the conclusion is arrived at "from the material reviewed that the treatment of this condition has not emerged from the state of empiricism."

Efforts at control of the foreign commerce in opium were made by the United States as early as the 'thirties and 'forties of last century, more especially in regard to China, Siam, and Japan. It was, however, after the acquisition of the Philippine Islands by the United States that American attention was more particularly directed to control of narcotic traffic in the Far East. Bishop Brent, who had become aware of the abuse of opium by the Philippinos, in 1906 urged President Roosevelt to international action, and this resulted in the Shanghai Commission of 1909. That Commission, to which representatives of America, Great Britain, Austro-Hungary, Germany, France, Italy, China, Japan, the Netherlands, Persia, Portugal, Russia, and Siam were invited, recognised the sincerity of China in grappling with the opium trade, the need for suppressing the smoking of opium, the necessity for controlling the manufacture and distribution of morphine and other drugs also liable to abuse, and, above all, that the question was not one for the Far East alone, but that the Occident as well as the Orient was suffering fr the abuse of narcotics, and that any real control the commerce in these dangerous drugs must international and, indeed, world-wide. The Uni States followed up the report of the Shanghai Co mission by inviting an international conference at T Hague to conventionalise the findings of the Co mission. This Conference, after some demur by British Government arising from their recent agr ment with China to terminate the Indo-Chin opium trade, met at The Hague in 1911–12, and furt conferences were held there in 1913 and 1914. T International Opium Convention of 1912 mark not only a new departure in international effort, bound its contracting parties to the introduction legislation to give effect to its provisions. T Convention sought to regulate the production a distribution of raw opium, to suppress the use opium "prepared" for smoking, and to limit manufacture, sale, use, import, and export of morphi heroin, and cocaine to "medical and legitim purposes." Twelve powers only had taken part the first Hague Conference, but by 1913 some 46 h signed it, and ratification was proceeding. T intervention of the Great War paralysed the progr of international coöperation from 1914 to 1918, the Peace Treaties of 1919 secured the adhesion Powers which had previously refused ratificati Great Britain, by the Dangerous Drugs Act of 19 and 1923, gave legislative effect to The Hague Co vention as regards the Mother Country. By Act of 1914, known as the Harrison Narcotic A amended in 1918, 1926, and 1927, the United Sta put The Hague Convention into operation within borders, and by the Jones-Miller Act of 1922 restric foreign trade in narcotics. By the Covenant of t League of Nations, the supervision and execution agreements in regard to the traffic in dangerous dr was entrusted to the League. The story of the act of the Council and Assembly of the League and of Advisory Opium Committee is related, and also th of the prolonged and contentious opium conferen at Geneva in 1922–23, which resulted in a fresh agr ment among Powers with possession in the Far Ea and a new Convention reproducing and supplement The Hague Convention to which all States co adhere. It is this last instrument which will co into force on Sept. 25th, and although the Uni States and Chinese representatives withdrew fr the Conference and are no parties to the Conventi it should, through the Central Board it sets increase the control of the traffic and reduce scandalous amount of illicit trade.

This compendious work of Dr. C. E. Terry and M Pellens will prove a timely and serviceable aid students of the opium problem and of the tang story of efforts after international control of tra in dangerous drugs.

RECENT ADVANCES IN SURGERY.

By W. HENEAGE OGILVIE, M.D., M.A., M.Ch. O F.R.C.S. Eng. Assistant Surgeon, Guy's Hospi and Lecturer in Clinical Surgery to Guy's Hosp Medical School; Surgeon to Out-patients, Har stead General and North-West London Hospi London: J. and A. Churchill. 1928. Pp. 461.

THE success of "Recent Advances in Medicin the first number of the series to which the pres volume belongs, has encouraged the publishers in production of several books which are widely r and admired. The surgical volume, which mi reasonably have been the second volume to appr actually comes no higher than tenth in the list, has been eagerly anticipated. It is well worth wait for. The burden of its preparation has fallen chi on the author whose name appears on the title pa but he has been ably assisted by some of his colleag The chapters on cancer, plastic surgery, chest surg and venereal disease have been written respecti by Mr. J. F. Carter Braine, Mr. T. P. Kilner, Grant Massie, and Mr. V. E. Lloyd, all of wh

maintain a high standard of achievement. In his preface Mr. Ogilive states that the difficulty which confronted him was to decide what recent surgery is and what constitutes an advance. Advance in surgery is not commonly a thing of sudden birth and it must be rare indeed to find that the conception of a new method is followed rapidly by its evolution in a practical and useful form; this is usually a process lasting many years. In spite of obvious difficulties, however, the author has succeeded in writing a clear, concise, and systematic account of the latest work in all branches of surgery. The magnitude of his task may be estimated by the references to recent surgical literature at the end of each chapter. These references should be of very great value to the busy surgeon who wishes to consult a small number of modern papers on any aspect of his subject. Much of the best surgical literature of the last few years is quoted here. One of the most interesting chapters is that on plastic surgery. The impetus given to this branch of surgery by the war makes it obviously a recent advance; its importance has hardly diminished in peace time and is not likely to diminish while modern machinery and motor-cars continue their devastating progress. In the section on the toxæmia of acute intestinal obstruction the use of bile as a therapeutic measure is not mentioned, perhaps because it has hardly yet emerged from the purely experimental stage. There is one serious blemish for which the author may not be entirely responsible—the frequency with which the reader is told that a full description of some test, with a distinct surgical application, is to be found in the companion volume on Medicine. There are some omissions which spoil the symmetry of the sections in which they occur. It is clear that the object is to save space by avoiding repetition and not to advertise a book which is far too popular to need such assistance, but a certain amount of overlapping is preferable to the need for simultaneous consultation of two volumes. We trust that in the next edition Mr. Ogilvie will supply these few pages which will make his excellent book complete by itself.

LATENT TUBERCULOSIS.

La tuberculose pulmonaire latente. By Prof. J. RIEUX. Paris: Gaston and Co. Pp. 247 and plates. Fr.27.

THE author has written this book out of the rich fullness of 35 years' experience as Médicin-Inspecteur of the French Army. During this long period he has had ample opportunity of studying the question of latent tuberculosis in the young adult male population of France as it passes into the ranks of the army. Many terms have been devised to express this condition in French military parlance—"pré-tuberculose, imminence tuberculose, bronchite suspecte, bronchite de sommets, sclérose de sommets"—but the author rejects them all as unsatisfactory and adheres to the term of latent tuberculosis. He lays down certain conditions for the definition. The lesion should be manifest and accessible to investigation, its tuberculous nature should be proved, but the stage of its evolution should not be capable of recognition. Prof. Rieux devotes six chapters to an exposition of his subject, including symptomatology, radiology, and clinical pathology. At the end of the volume a number of illustrative cases are quoted and a collection of radiograms, which last appear to have suffered a little in the process of reproduction. No strikingly new work is described—there is, indeed, none to describe—but the book is comprehensively written and forms a lucid presentation of the subject.

RULES FOR RECOVERY FROM PULMONARY TUBERCULOSIS.

Fifth edition, thoroughly revised. By LAWRASON BROWN, M.D. Philadelphia and New York: Lea and Febiger. 1928. Pp. 244. $1.50.

Dr. Lawrason Brown believes that in pulmonary tuberculosis the physician must not only be prepared to do what is right himself, but also to make the patient, the attendants, and externals coöperate. The well-tried book before us is therefore intended to supplement the care of the physician which can only carry the phthisical patient a short distance on the way to recovery. The physician of to-day must, the author recognises, *teach* in order to serve most intelligently, and his own teaching in this little book has saved countless lives of a type which are peculiarly worth saving. Not dramatically, as a surgeon saves lives, but with precept upon precept, line upon line, chosen for effect. The book is not intended for skimming but to be gone over chapter by chapter day by day, for, as the author remarks, with increasing knowledge new and important facts may be discovered in many of its paragraphs. The present edition lacks the illustrations of the earlier editions, but the reader is referred to the *Journal of the Outdoor Life*, where they may be found.

THE SURGERY OF THE SKIN.

Chirurgie der Haut und des Unterhautzellgewebes. By Dr. F. R. ASCHER. Being an instalment of *Die Chirurgie*, by Prof. Dr. M. Kirschner and Prof. Dr. O. Nordmann. Berlin and Vienna: Urban and Schwarzenberg. 1928. With 46 illustrations and 29 coloured plates. Pp. 263. M.22.

THIS production on the surgery of the skin and subcutaneous tissues forms a small part of a new text-book on surgery, both general and special, by numerous writers. It cannot be purchased separately. After a short historical and anatomical introduction, the subjects discussed include nævi and other congenital conditions, such as v. Recklinghausen's disease, the various types of skin wounds, including gunshot and caustic wounds, and dog-bites, with the lines of treatment specified. Damage of the skin by heat, light, and X rays, electricity, lightening, and radium are next considered, and then follow the surgical aspects of furunculosis, erysipelas, tuberculosis, actinomycosis, anthrax, &c. The circulatory disturbances of the Raynaud type, gangrene, erythromelagia, and ulcers of the leg are fully discussed, and also neoplasms, benign and malignant. The volume has been written by a surgeon for surgeons, and with such a title should, we think, contain a chapter on the plastic surgery of the skin and the modern methods of skin-grafting.

In other respects the work is satisfying. The style is simple and succinct, and the publishers have been generous with a number of excellent illustrations.

HEALTH AND CLEANLINESS.

By W. A. MUIR, M.D., D.P.H., Medical Officer of Health for Gillingham, Kent; and GEORGE H. GREEN, B.Sc., B.Litt., M.A., Ph.D., Lecturer in Education, University of Wales. London: The Health and Cleanliness Council. 1928. Pp. 63. Gratis.

THIS little text-book for teachers is still a further manifestation of the remarkable activity of the Health and Cleanliness Council, which seems to suffer from no shortage of funds for the free issue of educational material. After a brief foreword by Dr. George F. Buchan, M.O.H. of Willesden, and a concise introduction, it deals in nine lessons with the teaching of children about cleanliness of the person, of the home (especially the kitchen), of food, of personal and bed-clothing, and about the special problems of cleanliness while in camp or at picnics. The book is illustrated with reproductions of the now well-known posters of the Council, and is a model of its kind. How valuable this cleanliness propaganda would have been 50 or 100 years ago, when the dirt-diseases were really a serious menace! There is just a little danger now that too much stress on this one aspect of public health education may create an ill-balanced conception of the whole problem in the child-mind.

AIDS TO EMBRYOLOGY.

By RICHARD H. HUNTER, M.D., M.Ch., Lecturer in Anatomy, Queen's University, Belfast. London: Baillière, Tindall and Cox. 1928. Pp. 160. 3*s*. 6*d*.

THIS little book contains a good deal of information, given, of course, in a much abbreviated form. We do not believe in the utility, for the student of medicine, of accounts of development shorn of their details, so that, from this point of view, we consider the chapters which deal with general theories to be the best in the book; but for students who merely look on embryology as an examination necessity this little work will prove an admirable aid. It is only fair to say, however, that in some matters Dr. Hunter does not adopt the descriptions of parts undergoing development which are usually found in most English textbooks.

PERCIVAL'S MEDICAL ETHICS.

Baltimore: The Williams and Wilkins Company. 1927. Pp. 291. 13*s*. 6*d*.

Thomas Percival was born in Warrington in 1740, and entered the University of Edinburgh at what was then the rather advanced age of 21. From boyhood he had been a student and when he settled in practice in Manchester he became associated with the founding of the Manchester Literary and Philosophical Society, a distinguished body which fostered among others Dalton and Joule. Percival must have been a man of striking personal characteristics, for he was elected a Fellow of the Royal Society before he had made any public mark, and even in the eighteenth century, when the favours of private interest were bestowed with particular cynicism, his election seems to have caused surprise. However, in this event it was justified, for his public work in Manchester, where he lived all his life, led to the formation of proper sanitary standards in the city, and laid the foundation for factory legislation in the whole country. His work on medical ethics, which has now been edited by Prof. Chauncey D. Leake, the well-known pharmacologist of Wisconsin, was written for the guidance of his son, a medical student. It is entitled "A Code of Institutes and Precepts Adapted to the Professional Conduct of Physicians and Surgeons," and it was very thorough in its scope, taking regard of the medical position in hospitals, in private practice, and also in public situations—indeed, in its inception it was a work of medical jurisprudence. It may be thoroughly recommended for perusal by those who wish to understand what were in the eighteenth century the essential matters to be regarded for the formation of proper relations between medicine and the public, and it is interesting to note that in the twentieth century the main lessons are perfectly apposite, though in detail so many circumstances have changed. Both the editor and the publishers are to be thanked for an interesting volume. The London agents for the publication are Messrs. Baillière, Tindall and Cox.

THE YOUNG MAN AND MEDICINE.

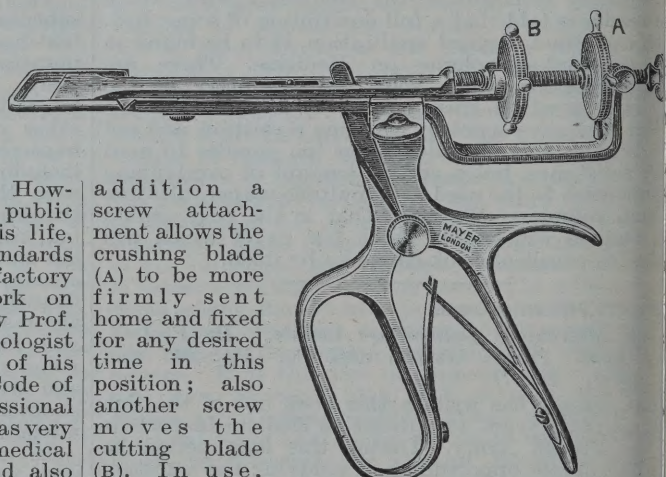
By LLEWELLYS F. BARKER, M.D., LL.D., The Macmillan Company. 1928. Pp. 202. 10*s*. 6*d*.

Dr. Barker is Professor Emeritus of Medicine in Johns Hopkins University, New York, and it is, consequently, out of large experience that he addresses his book "to the young men in medicine with whom I have had the privilege of association in Canada and in the United States." His purpose, in the first instance, has been to help those who have not reached any final decision as to what they want to do in life. The question is one which he thinks should be decided by themselves, but for this purpose guidance should be supplied out of the experience of leaders in various professions and callings. This small book is one of a series, termed the "Vocational Series," in which for the information of the young man, the various things which he has to consider before deciding to be a lawyer, a clergyman, a doctor, a journalist, and the rest, are set out. The medical track is well charted, though some of the advice given is more suitable to one who is on the journey than one who has not yet made up his mind to start.

New Inventions.

THE LA FORCE GUILLOTINE.

IT is now nearly 12 months since an American visitor demonstrated the La Force guillotine to me. I have used the instrument many times and feel that its employment should be much more general in this country. As far as I know it is rarely used. The instrument is built on the pattern of the Ballenger guillotine, but with two sliding parts, the upper (or outer, when considered as in use on the tonsil) which is slightly roughened and clamps the tissue between tonsillar capsule and constrictor muscle, and the inner or cutting blade. Both are worked from a scissor or forceps handle as in the Ballenger pattern, but in addition a screw attachment allows the crushing blade (A) to be more firmly sent home and fixed for any desired time in this position; also another screw moves the cutting blade (B). In use, under general and complete anæsthesia to produce relaxation, the tonsil is engaged and dealt with as in any other enucleation operation with the guillotine, but after the crushing or hæmostatic blade has reached the bottom of the fenestrum it is still more firmly forced down and held in position by the screw. The cutting blade is then forced down by turning the second screw and withdrawn by reverse action of this screw, and the tonsil now freed from its bed lifted out with suitable forceps, such as Luc's, or with a sponge-holder. The hæmostatic blade is allowed to remain on for five minutes or more, when it is released by unscrewing, and the guillotine removed. In favourable cases there will be no bleeding at all, or at most only a slight tinging of the mucus in the pharynx; in the majority of cases there has been no need to use a single swab. There is singularly little pain or discomfort in the 48 hours following operation and in this, the method contrasts very favourably with other guillotine enucleations or with dissection. The instrument is not so easy to use as the O'Malley, and a slightly larger percentage of failures to enucleate the tonsil cleanly will result. I have no hesitation in stating that when successful the method is ideal, but like all others the La Force occasionally fails.



The instrument is made by Messrs. Mayer and Phelps, New Cavendish-street, London.

LINDLEY SEWELL, M.B., B.S. Lond.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 15, 1928.

EPILEPSY AS A SOCIAL PROBLEM.

ALTHOUGH there are probably few diseases which ve been recognised for a longer time and about uch more has been written than epilepsy, it has to admitted that as a social problem it has hitherto ceived comparatively little, and certainly quite adequate, consideration. For this reason the two icles which we publish in the present number, the e (p. 568) on the results of a census made in Surrey d the other (p. 545) on the subsequent history of a mber of children who have passed through a resintial school, are worthy of careful attention. To ose who are unaware how scanty are our statistics disease which does not concern the sanitary or the rying authorities it may come as a surprise to learn at there are no reliable figures as to the incidence epilepsy. Moreover, in view of the wide differences the frequency of attacks, the great variations in pe and severity which undoubtedly result in many ses being unrecognised, and the fact that epileptic tacks not uncommonly occur as a complication or mptom of some even graver and more urgent ndition, it may safely be said that it would be possible to obtain any complete and reliable atistics regarding the incidence of the disease. The rmanent Committee on Epileptics did not attempt e impossible. They limited their census to a definite ea—namely, the county of Surrey—and to such rsons as were chargeable to public authorities. ey found that in the area examined the proportion such epileptics amounted to 0·65 per 1000 of the neral population, and, if this may be accepted as air sample of the country as a whole, they estimate at in England and Wales there are 25,000 persons ected by this disease who are a public charge. Of is number rather more than one-third—again dging from Surrey experience—are mentally normal, nilst the remainder are either insane or mentally fective. It is clear, therefore, that from the point view of incidence alone the problem of the rate-pported epileptic is a serious one. It becomes e more so in view of the facts ascertained by the mmittee that one-quarter of the total number of ucable epileptic children are attending no school or stitution, and that of those who come within the ope of, and should be dealt with under, the Mental ficiency Acts, less than one-fifth are in fact so alt with.

No doubt when epilepsy is complicated by, or has duced, serious mental defect or deterioration there is tle likelihood of the sufferer being rendered economicy useful; but there are many young mentally rmal epileptics who drift into chronic unemployility for want of proper education and training, and ere is every reason to believe that the absence of ch care is also an important factor in bringing about ental deterioration in a number of cases. Dr. J. YLOR FOX, medical superintendent of Lingfield ileptic Colony, in his account of the after-history of 2 children who passed through the colony in a period eight years, shows the benefits which may result m training in a suitable residential school. Although e children admitted to Lingfield are a worse than erage group, inasmuch as they suffer from attacks which are too severe to allow of them attending ordinary schools, their subsequent history shows that 28 per cent. of the total have become partly or entirely self-supporting. When the unpromising nature of the raw material is borne in mind this result must be considered as very satisfactory and as demonstrating the value of the treatment and training received. Unfortunately, the accommodation at present existing for cases of this kind is so inadequate that these advantages are only available for a relatively small number. Dr. FOX estimates that the proportion of "educable" epileptic children who are accommodated in residential special schools is only about one-fifth of the total in existence, the remainder either drift into poor-law or other institutions or they are allowed to remain at home. In any event it may safely be said that the great majority of them receive little if anything in the nature of skilled treatment and training. In addition to this, as we have already mentioned, the accommodation available for those in whom the epilepsy is accompanied by mental defect is equally unsatisfactory. A careful study of the facts presented points conclusively to the serious nature of the problem, and to the utter inadequacy of the existing accommodation for the epileptic, whether mentally normal or abnormal. It may be that some of these matters will be dealt with by the Board of Education Committee on Mental Deficiency now sitting, whose report, we understand, will be published before the end of the year. It may also be that some attention will be given to the problem in the alterations to the poor-law system which are imminent. In any case, however, it cannot be doubted that epilepsy constitutes an important social problem, and that the time has arrived when it should receive serious consideration from this aspect.

THE FALLING BIRTH-RATE.

THE birth-rate for 1927 turns out to have been the lowest recorded in this country since the establishment of civil registration, and responsible citizens hold up their hands in horror, wondering what the young people are coming to. A sane view of the situation suggests that there is nothing to be horrified at except the spectacle of human beings responding to their environment in the same way as any other live thing, animal or plant. Large and increasing populations have been welcome in the past for two reasons. In the first place, they provided larger armies—a consideration which was perhaps natural in Old Testament times and was artificially flogged into prominence in Europe as late as the nineteenth century; it has now, we hope, gone for good. And in the second place, rulers and governors realised that large numbers are more likely than small ones to comprise those extreme variants in qualities of body, mind, and spirit on which leadership depends so much. We have, too, in the last 150 years become so accustomed to seeing the population of this country progressively growing larger and larger, and to hearing continually that there is a shortage of houses that we find it difficult to realise the possibility—indeed, as far as can be foreseen, the certainty—that our numbers will very soon cease to increase and that the population will return to the stationary position which it had, at a much lower absolute level, in the sixteenth and seventeenth centuries. Even the town-planner and the speculative builder do not seem to have appreciated the position.

If people really believed in evolution, they would have more constantly in mind the thought that man

is the product of his ancestry and that he is likely in matters of large temporal importance to behave in ways analogous to theirs. The numbers of any animal or plant which are alive in any given area at any moment are the maximum which conditions allow. Breeding is actually or potentially profuse enough to keep the place as full of a particular species as it will hold; with plants it is generally a question of space, with animals of food. And so long as conditions remain unaltered this optimum population persists at the level which allows the greatest number of individuals to exist at a fairly high level of perfection; natural populations of animals and plants do not consist of starvelings but of individuals which are well grown, healthy, and reproductive. There is, in short, no striking evidence in the survivors that there is any injurious overcrowding. But if conditions alter, the optimum population changes too; the dandelion and other weeds of bare soil exist on the minor catastrophes of the earth's surface and the rat population varies directly with the available food-supply. Man needs space and, being animal, especially food, and under any given set of conditions he multiplies till the number of human beings is the largest which can obtain the return from life which they are prepared to accept as adequate. In comparison with smaller animals he reproduces slowly, but given time he will fill up any conditions in which he finds himself. He differs, of course, from animals in that he can to some extent make his own environment—though animals are not wholly without that capacity—and to that extent he can control his own optimum population. It is here apparently that anthropoid apes fall short. With, at any rate in the orang and gorilla, exceptional physical powers they lack the mentality to alter the circumstances of their life in such a way that they can be numerous. They are, in fact, all sparse; it was, we think, Sir HARRY JOHNSTON who estimated that there were not more than 10,000 chimpanzees in equatorial Africa and the larger ones are fewer still. We may guess that early man was hardly abundant by modern standards; conditions of life must have been very hard, and it was perhaps just a lucky chance that enabled him to multiply enough to reach the stage where by numbers and herd action he could have the mastery over other beasts. And it is most interesting to note, as Prof. CARR-SAUNDERS has pointed out, how primitive man always regulates his numbers to the available food; profuse procreation seems to have come in with the Christian era and among savages the production of children is, as a rule, severely restrained, partly by rules and customs, partly by a sheer lack of fertility to which attention has often been drawn lately in the South Sea Islanders. As man's control over his circumstances developed and increased, so larger populations became possible and where and when possible they were automatically achieved. The flood of new people which flowed in this country all through the nineteenth century was the product of the changes known as the industrial revolution; the flood has slackened some time since and will soon come to a standstill unless some undreamed-of expansion in the facilities of life is discovered. Theoretically, a further growth of population might occur if the standard of living required were reduced. But it is very doubtful whether this factor is really capable of any deliberate control. The indefinable "adequate return" is not luxurious physical ease but the state in which a man can do best with his mind and body; "motor-cars *versus* babies" applies only to a negligibly small part of the population; the ordinary run of men have derived from their animal ancestors a far finer sense coöperative life.

It follows, as Dr. F. A. E. CREW pointed out in h thoughtful address at the British Medical Associati at Cardiff (reported at some length in our issue Sept. 1st, p. 463), that we must look much furth than the boom in frank contraception for our explan tion of the diminishing birth-rate. The birth-rate England began to fall 50 years ago in obedience the principles of populative growth which, as PEA has pointed out, apply to yeast cells and the *Drosophila* as well as to Spaniards and Dutchm and Frenchmen and any live thing else. It h continued to fall along the predicted lines and, wheth we like it or not, in the absence of some paroxysm civilisation our numbers will soon cease to increa any further. Deliberate birth restriction may having a good deal of effect in these, the later, stag of the process, but the main explanation is man's unconscious or subconscious adjustment to l environment, in his animal response to circumstanc Those will view the Registrar-General's figures wi the greatest calm who believe with the authors of t Bridgewater Treatises that the world is construct in the best possible way.

COMPENSATION FOR SILICOSIS.

COMPENSATION for the occupational disease silico is more complicated than for other diseases on accou of the long latency and chronicity of the complai It has so far only been granted in Great Britain a some of the overseas Dominions. South Africa, wi regard to the Rand gold mines, was the first to a and there prevention and compensation are close interlocked. Thus any miner who develops ordina pulmonary tuberculosis is suspended from emplo ment in order to exclude infection from the oth miners, and is compensated. In England action w taken first on somewhat similar lines in 1918 under scheme applied to the small refractories industri Thenceforward use of the legislative powers tak was delayed until 1927 when compensation w granted to metal grinders, but the somewhat co plicated procedure adopted in the refractories' sche was then abandoned. At the same time a scheme f the pottery industry is in preparation. Action these lines, however, is proving wearisomely p tracted; and every year men are succumbing to t acceptedly occupational hazard in such importa industries as stonemasonry, granite-cutting, quarryi and metalliferous mining, without any compensatio The Home Office has now abruptly altered its poli of proceeding industry by industry, and has ju issued a comprehensive draft scheme for granti compensation for death and total disablement practically every occupation in which the silica ri exists. Even men in coal-mines driving hard headin or sinking shafts through sandstone rocks are to included, also millstone builders and abrasive soa makers, as well as the crafts named above. T plan of insisting upon periodical medical examin tions, and upon suspension with compensation those showing early signs, is abandoned. Co pensation is only to be granted for total disableme or death. At the same time, while proposing thus award compensation which is clearly overdue, t Ministry announces the intention to examine in d course each industry affected in order to link preventive procedure with compensation awar This procedure is likely to lead rapidly to limitati of the silica hazard. It will have an indirect econon

ect, even where large operations, such as the con-uction of the Liverpool Cathedral with a dangerous one, have reached an advanced stage, for the cost completion must be greatly enhanced. Indeed, the e of sandstones for building purposes is likely to ase; since, however, bricks, cement, and limestone e all home products, no unemployment will be used thereby. When the proposed scheme has been tified in whole or in part England will have resumed r usual lead in matters of industrial hygiene. At esent, besides South Africa, New South Wales, in lation to the county of Cumberland and to the oken Hill mines, is ahead of us; and so also are e Canadian provinces of Alberta and Ontario. In veral American States, where in the Compensation ts the word "injury" is defined to include diseases ising out of employment, silicosis is covered with her occupational diseases. In continental countries, the other hand, no compensation has yet been anted; but in Germany, at any rate, researches eady published by L. TELEKY and in progress by KOELSCH, must before long result in the granting of mpensation. Silicosis is one of the most widespread d fatal of all occupational risks. It has already manded the attention of the expert advisers of the ternational Labour Office at Geneva, due mainly British representation; and is likely soon to be aced on the list of compensable diseases for inter-tional adoption.

PSYCHOLOGY IN THE MEDICAL CURRICULUM.

AT the meeting of the British Association the mmittee appointed to consider the place of normal ychology in the medical curriculum presented its al report. The committee consisted of the follow-g members: Dr. W. BROWN (chairman), Dr. R. D. LLESPIE (secretary), Dr. C. H. BOND, Prof. E. P. THCART, Dr. H. DEVINE, Dr. J. A. HADFIELD, Dr. RNARD HART, Dr. D. K. HENDERSON, Colonel J. R. RD, Dr. C. S. MYERS, Prof. G. M. ROBERTSON, . T. A. ROSS, and Prof. T. H. PEAR. They find at of 26 medical schools of the British Isles, 13 offer courses whatever in normal psychology, while offer optional courses and 5 compulsory ones, but ce the report was prepared Edinburgh University s decided to make attendance at a course of lectures normal psychology compulsory. Most of the dical schools in the Dominions offer courses in the bject. The committee report that they have ceived official replies in favour of the provision and lue of such courses, while the deans of most of the dical schools have responded to their inquiry. After refully examining existing conditions, the com-ittee recommend that in every medical school a mpulsory course of instruction in normal psycho-gy, of not less than 10 and of not more than 20 ctures, should be given during the pre-clinical ars—preferably in the second year; and that, henever possible, it should be supplemented by a urse of about ten two-hour meetings in experi-ental psychology. The committee further recom-end that such instruction should be so planned as serve as a foundation for subsequent lectures in e pathology of the mind given during the clinical ars of the medical course, and it need hardly be d that from the point of view of the bulk of dical practitioners this is a most important pro-sal, as it is in this way that proper correlation academic instruction with clinical procedure may obtained.

Thus psychology and physiology would be taught at the same stage of the medical curriculum, and this combination is from every point of view desirable. It is usual to consider the two subjects as parallel, dealing respectively with the normal functions of the human mind and of the human body. Prof. W. MCDOUGALL [1] claims a much wider field for psychology, proposing the distinction between the two sciences that physiology studies the processes of organs and tissues, whereas psychology studies the total activities of the organism. To admit this view without reserve would be to confess that the medical curriculum which contains no course in psychology is absurdly inadequate, and indeed future generations are likely to take this attitude. Meanwhile all will agree that just as physiology provides the necessary basis for subsequent instruction in pathology, so a simultaneous course in normal and experimental psychology would be an excellent preparation for the lectures in morbid psychology which belong to the clinical years. There can be little doubt as to the wisdom of the committee's recommendations. Psychological medicine was at one time almost confined to the study of insanity; to-day it is recognised that the disorders of the mind and of the nervous system embrace a far wider field, and that the ability to recognise them immediately and to treat them effectively are of enormous importance in the everyday practice of the family doctor. We now know that there is not an organ in the body whose disorderly function may not be due to psychoneurotic conditions. The origin and spread of the exaggerated claims of certain schools of psychotherapy have been largely due to the lack of previous systematic training in normal psychology. The same ignorance has been responsible for the equally untenable position adopted by opposite extremists who believe that functional disorders are merely "imaginary" and therefore demand merely "imaginary" remedies, that medical instruction should be confined to the study of living matter and of material remedies, and that a knowledge of the workings and influence of the mind is of no concern to the ordinary medical student. However congested be the present curriculum, there can be no doubt that by general demand the recommendations of the British Association Committee must soon be carried into effect.

[1] The Battle of Behaviorism. An Exposition and an Exposure. By John B. Watson and William McDougall. London: Kegan Paul, Trench, Trübner and Co. 1928. Pp. 103. 2s. 6d.

FACTORY INSPECTION.—The Home Secretary has appointed a Committee to consider and report what addition to the Factory Inspectorate is required, whether any changes in its organisation are desirable, and what other measures, if any, can be taken to enable the Factory Department to discharge adequately its duties now and in the future. The members of the Committee are:—Sir Vivian Henderson (chairman), Sir Gerald Bellhouse, Mr. R. R. Bannatyne, Mr. Kenneth Lee, Miss H. Martindale, and Mrs. C. D. Rackam. The secretary of the Committee is Mr. L. N. Blake Odgers, of the Home Office.

GERMAN MEDICAL JOURNEY TO EGYPT.—On the occasion of the centenary celebration of the University of Cairo, the Vienna Committee for Medical Tours Abroad has arranged a visit to Egypt covering the period Dec. 14th, 1928, to Jan. 4th, 1929, the journey out being made by Venice, Brindisi, and Alexandria, returning by Rhodes, Athens, and Corfu. The visit coincides with a Congress of Tropical Medicine and Hygiene in Cairo, and the usual winter international exhibition of medical arts and sciences. Programme and information from Dr. F. Barach, Vienna I., Biberstrasse 11.

Annotations.

"Ne quid nimis."

THE YEAR'S WORK AT THE MINISTRY OF HEALTH.

ALTHOUGH we still await the Report of the Chief Medical Officer for last year much interesting information is, as usual, conveyed in the Annual Report of the Ministry of Health (1927–28).[1] Its summary of general health questions rightly gives prominence to the amendment of our mental deficiency legislation at the end of last year. The old restriction which confined the application of the Mental Deficiency Act to persons whose mental defect had existed "from birth to early age" has at last disappeared and the new definition of "mental defectiveness" is "a condition of arrested or incomplete development of mind existing before the age of 18 years, whether arising from inherent causes or induced by disease or injury." One advantage of this enlargement of the statutory definition is that it will now be possible to take suitable steps to provide care and treatment for persons suffering from the sequelæ of encephalitis lethargica. Another important piece of legislation which became operative in the past year is the Therapeutic Substances Act, 1925, which is designed to regulate the manufacture, sale, and importation of vaccines, sera, and other therapeutic substances whereof the purity and potency cannot adequately be tested by chemical means. The Act and Regulations, it is stated, have been brought into force without friction. One of the medical officers of the Ministry, in conjunction with a representative of the Medical Research Council, has inspected manufacturers' premises both in this country and on the continent. At the end of last March 36 licences to manufacture had been issued, 43 licences to import, and 11 licences to import for the purposes of research. Other matters summarised in the Report include the winding up of the Voluntary Hospitals Commission. Here, it seems, the Ministry considers that there is no further scope at the moment. "In view of the improved financial position of the voluntary hospitals and the fact that the Government had found themselves unable to make any grant-in-aid of the capital cost of hospital extensions," the Commission has been encouraged to bring its labours to a close by the presentation of its Final Report. Mention is also made of the work of the Committee on Post-Graduate Medical Education. The Committee unanimously decided that the establishment of a new centre with the 300 or 400 beds requisite for providing adequate clinical material was impracticable on the ground of the expense of initial capital cost and annual maintenance. The alternative was the conversion of an existing hospital, and the report gives the reasons for the selection of the West London Hospital at Hammersmith, where there is already a long tradition of post-graduate teaching. The carrying out of the scheme is still delayed by lack of the capital wherewith to make the desired structural alterations. National health insurance practitioners will read with interest the section of the Ministry's report which deals with medical benefit, its cost, scope and administration, the investigation of excessive prescribing, and the revision of the disciplinary procedure. On the whole the Report gives the impression of a general improvement in health standards and facilities. Historically there has been a fusion of public health and local government administration in England. It is satisfactory to find that, when the Minister's hands are so full with changes in the rating system and the poor-law, the claims of public health are not overlooked.

[1] Cmd. 3185. H.M. Stationery Office. 5*s*.

CHRONIC PYELITIS IN CHILDREN.

MUCH attention has been devoted in recent years the chronic infections of the urinary tract in childre The occasional occurrence of a valve in the posteri urethra of boys, for example, which has been not by many observers, suggests that congenital abnc malities should be looked for in chronic cases resisti treatment. In a recent article [1] P. György mentio that this particular deformity was described Englisch in 1875, a fact which appears to have be ignored by recent writers. György goes on to discu the causation of chronic pyelitis, quoting cases whi have confirmed his view that chronic pyelitis is serious disease and, if untreated, may well lead severe affection of the kidney and even uræmia. nearly all resistant cases some congenital abnormali or interference with the neuromuscular mechanism the ureters, bladder, or urethra with their sphincte is present. Just as in cases of enlarged prostate adults deficient renal function may be restored normal after removal of the cause of obstructio so treatment of an obvious deformity in the urina tract in the chronic pyelitis of children is well wor while, even if evidence of impairment of renal functi is present. The five cases described by Györg however, must be regarded as due to defective neur muscular mechanism since no congenital deformi could be found to account for the dilatation of t ureters. That many of the older theories with rega to the ætiology of pyelitis can no longer be accept is brought out by I. Robertson in a plea [2] for furth investigation of the pyelitis of infancy. He poir out that the theories of infection by upward sprea by the general circulation, or by direct spread fro the bowel are none of them satisfactory from t pathological standpoint. The belief that pyelitis much more common in girls than in boys is n according to Robertson, altogether borne out evidence from post-mortem figures, but since pyeli tends to be more serious in boys than in girls, autops may not give a fair indication of sex incidence. infancy, however, the mortality among girls certainly not lower than that among boys. Of 1 cases of pyelitis in infants at the Harriet Lane Hon the death-rate is given as 60 per cent. girls and 40 p cent. boys. Dr. Robertson is inclined to belie that the symptoms of many cases of pyelitis are d to a focal suppurative nephritis. The subject nee more attention, for the association between pyeli and inflammation of other sections of the urina tract remains obscure. A large series of pyelogra might help to throw some light on the ætiology the condition, and since they also may provide so guidance to treatment, they should be taken in intractable cases of chronic pyelitis.

THE WHEATLEY MEMORIAL.

James Wheatley had a vivid and noble concepti of the health service, and his recent death was a l to public medicine which it may be hard to make goo He was frankly concerned less with the care of si and abnormal persons than with work which ten to improve the vitality of the ordinary individu Open-air schools for subnormal children were Wheatley just the prelude to open-air methods f the school population. The risk of a few accide should not, he held, interfere with the health a vigorous development in body and mind of the peo as a whole, and when he watched German childr swimming in the Rhine he thought of the resulti improvement in their health and physique and r of the casualty list of accidentally drowned. Indo swimming-baths he looked upon simply as places f teaching swimming and for amusement; in t utilisation of our rivers for bathing and open- swimming he saw a great forward movement in pub

[1] Jahrb. f. Kinderh, 1928, cxx., 253.
[2] Med. Jour. Australia, June, 1928, p. 770.

giene. It is therefore peculiarly fitting for his lleagues in the public health service to perpetuate heatley's memory by the provision of a floating imming-bath on the river Severn near to the town Shrewsbury, whose health was his lifelong care. om the further side of the raft swimmers will have rect access to the river, while on the hither side ere will be, pace Wheatley's gospel of living dangersly, a safe and sheltered bath for non-swimmers and ildren, with two screened lawns on the adjoining ore where men and women respectively can enjoy n-bathing before and after entering the water. No arge will be made for admission to the lawns or essing sheds, but a special pavilion is to be provided r those who can afford to make payment towards the keep of the bath. It is hoped by the promoters of e Wheatley Memorial that this bathing-place may come a model of its kind and extend further the fluence of this great sanitarian in bettering the health the people. The estimated cost is £2000, of which an onymous donor has given £250; contributions may sent to Dr. A. D. Symons, at 74, Wyle Cop, rewsbury.

INVESTIGATIONS ON PUERPERAL FEVER.

THE annual report of the Metropolitan Asylums oard for 1927–28 contains a valuable section on the vestigations carried out on cases of puerperal fever mitted to their hospitals. The pathological side this work is under the care of Dr. Leonard Colebrook. is report is in agreement with the views now nerally held with regard to the causative organism this disease—i.e., that nearly all severe cases of erperal fever are due to infection by a hæmolytic reptococcus. In every fatal case investigated by m this organism was found and appeared to be e cause of death. A technique has been evolved which the number of organisms present in the rculating blood can be estimated quantitatively. fatal cases the number of streptococci per c.cm. blood was found to increase in a more or less gular fashion until death, the number of organisms und in the blood varying between 5 and 5000 r c.cm. Only one patient survived in whom the mber of streptococci exceeded 30; of those in hom the number was below 30, one-quarter lived. ntrary to the general views on the causation of gors, the blood was often found to be sterile when gors occur, repeated blood cultures proving negative. t the present time much attention is being directed the association between the streptococcus of scarlet ver and the streptococcus of puerperal fever. r. Colebrook points out that there is one great fference between these two diseases. In scarlet ver the symptoms are the result of the action of exo-toxin, whereas in puerperal fever the cause the symptoms is the presence and proliferation of reptococci in the tissues and in the blood. He nsiders, therefore, that treatment of the two seases should be on fundamentally different lines. scarlet fever an antitoxin is required, whilst in erperal fever antibacterial measures are called r. Post-mortem examinations revealed the fact at in most fatal cases gross septic foci were to be und in the uterine wall, broad ligaments, or pelvic llular tissues, as well as infected clots in veins. It difficult to see how any drug could reach such tes in sufficient concentration to be effective. Hope r the future appears to rest in early treatment by me efficient bactericidal agent. Four lines of eatment have been investigated: immuno-transsion, passive immunisation by serums, intravenous dministration of mercurochrome, and intravenous dministration of organic arsenical preparations. In me of the patients who survived no specific treatent was carried out. Immuno-transfusion is now rformed with whole blood. A preliminary leucotosis is induced in the donor by the injection of uclein. On the whole, the results have not been as od as had been hoped. If a high degree of mmunity can be induced in the donor against the specific organism, better results may ensue. Various samples of serum from different laboratories have been tested. The result of this work is largely negative; very little increase in the bactericidal properties of human blood against hæmolytic streptococci was found. Mercurochrome was found to have no effect on the bactericidal power of the blood.

Arsenical drugs cause a marked increase in the bactericidal powers of the blood, and Dr. Colebrook considers this to be a most hopeful line for further investigation. Unfortunately the results obtained clinically do not confirm this optimism, since elsewhere in the report Mr. James Wyatt declares that the various organic arsenical preparations have had little or no effect on the course of the disease in cases of septicæmia. It is interesting to note that in 6 out of 22 cases operated upon for general peritonitis no vaginal examination had been made.

OBVIOUS AND OBSCURE INFECTIONS OF THE CENTRAL NERVOUS SYSTEM.

THE existence of epidemic diseases of the central nervous system is now well established, and the epidemic incidence of cerebro-spinal fever, poliomyelitis, and encephalitis has been memorable in the records of the first quarter of the twentieth century. In the George M. Kober Lecture, delivered on March 27th, 1928, at Georgetown University, Washington,[1] Dr. Simon Flexner reviews the history of these diseases and offers interesting comments on their ætiology and epidemiology. The large epidemic wave of cerebro-spinal fever which broke over Europe and America in 1904–05 and culminated in the pandemic of the war-period, appears to have spent its force and since 1920 the incidence of the disease has been endemic rather than epidemic. It is possible that emigrants from Germany and Austria conveyed the infection to the United States. The origin of epidemic poliomyelitis may be traced to north-western Europe—especially Sweden and Norway—and here again Dr. Flexner believes immigration to be responsible for the conveyance of infection. The first two outbreaks of poliomyelitis in the United States occurred on the eastern coast and in the States adjoining Minnesota, the western homeland of the Scandinavian emigrants. The outlook for this disease is less favourable than for epidemic meningitis. It arose in pandemic form in 1906–07; with many fluctuations epidemics have since recurred in Europe and the United States in late summer and autumn. In 1916 an unprecedented wave of poliomyelitis swept over New York State in which more than 20,000 cases were reported and many more cases, paralytic and non-paralytic, probably occurred. In 1926 outbreaks of some magnitude occurred in England and France, and in 1927 German Saxony, Roumania, and the United States were attacked. Epidemic encephalitis, the third disease which has reached epidemic proportions in the present century, can be traced back to two relatively small outbreaks during the war, one at Bar le Duc, in France, in 1916, the other in Vienna in 1917, which was well described by Economo. The extension of the disease was rapid. It appeared in England and Wales in 1918 and affected much of Europe. In 1919 cases were seen in the United States, and by 1920 the disease had become pandemic, whether permanently or not, Dr. Flexner is unprepared to say. He inclines to the view that epidemic encephalitis is of recent origin. The theory that it was confused in the past with other maladies does not appeal to him, not only because the clinical manifestations are very impressive, but because he considers that the after-effects are too severe and serious to have escaped incorporation into medical history. Dr. Flexner holds that meningitis and poliomyelitis may be dismissed from connexion with influenza since their epidemics arose independently. The epidemics of influenza and encephalitis certainly overlapped, but the height of the wave of encephalitis

[1] Jour. Amer. Med. Assoc., July 7th, 1928.

came several years after that of the influenza wave. He points out also that clinical cases of encephalitis were absent from the records of the pandemic of influenza of 1889–92. As to ætiology cerebro-spinal fever is due to the meningococcus, and the researches of Dr. Flexner and his collaborators at the Rockefeller Institute have demonstrated that poliomyelitis is due to a filter-passing virus. Epidemic encephalitis is probably due to a similar virus. Dr. Flexner reviews the work on the herpes virus and concludes that it is unlikely that simple herpes and epidemic encephalitis have a common ætiology. Accumulated evidence indicates that all these nervous epidemics are man-borne infections spread chiefly by way of the respiratory tract. Dr. Flexner expresses no definite opinion on post-vaccinal encephalitis, holding that its exact ætiology is still obscure.

PURER RIVERS.

THE first report of the Joint Advisory Committee on River Pollution is a businesslike and unanimous document. The law, it seems, is not inadequate to prevent contamination, but the law is not enforced. Serious and avoidable pollution exists, says the Committee, partly because the jurisdiction of the various administrative authorities is confined to a particular area only, partly because the bodies which ought to enforce the law have a number of other more pressing duties to discharge, and partly because the game-keepers are also poachers. The prevention of pollution should be in the hands of an authority exercising jurisdiction over the river as a whole (including its tributaries) at any rate so far as non-tidal waters are concerned. The creation of rivers boards or joint committees for this purpose is already possible under the existing law. Under Section 14 of the Local Government Act of 1888, the Ministry of Health can set up such bodies by Provisional Order on the application of the county councils and county borough councils concerned. The report recommends that this existing provision be specially brought to the notice of all these councils. There is reason to believe that the necessary applications to the Ministry of Health would then in many cases be made, and an important step would have been taken towards the ideal of purer rivers. The rivers Thames and Lee are controlled by special statutory Conservancy Boards with which the report does not propose to interfere. The powers of these two bodies, so vital to the water-supply of the metropolis, are already greater than the ordinary powers given by the River Pollution Acts. Indeed the methods employed by the Metropolitan Water Board for treating Thames water have, both in respect of finance and purification, been so successful as to encourage recourse to river water for domestic supply, and have been officially praised in the recent annual report of the Ministry of Health. Elsewhere, it is recommended, the Rivers Board areas should be big enough to make sure that skilled officers can be employed, and not so big as to make it impossible for the chief officers to keep themselves thoroughly informed of the existence of any pollution and the best means of prevention. Since effluents and local conditions vary, the problem is best dealt with by local effort, though central research must be pressed forward and results made generally available. The report is evidently impressed by the efficiency and economy of the three group-bodies which are already at work—the Ribble Joint Committee, the Mersey and Irwell Joint Committee, and the West Riding of Yorkshire Rivers Board. Though these bodies have power to take legal proceedings against offenders, legal process apparently is resorted to only in extreme cases. In most instances, advice and persuasion are found effective, and it seems to be happily the fact that the relations between the Rivers Boards, fishery boards, local authorities, and manufacturers are cordial and mutually helpful. It is obvious that this is not the time when Parliament can be asked to pass fresh legislation which may place further burdens upon industry. The figures of cost for efficient treatment of sewage in particular distric are sometimes extraordinarily high. Nevertheless, is reassuring to find that much can be done under t existing law, that needless, wilful, and remediab pollution can be prevented without interfering wi hard-pressed industries, and that there is evidence o keener popular interest in the purity of our rive than heretofore. Wider changes in the law and more closely coördinated study of the problems river purity, land drainage, and water power resourc may come some day. Meanwhile the Joint Adviso Committee makes some simple proposals which can tackled forthwith. As appointed by the Ministries Health and of Agriculture and Fisheries, the Committ is fully representative of local authorities, water a rivers boards, and the manufacturing, fishing, a agricultural interests. Its report carries the great weight on this account, especially as it has achiev unanimity.

THE PATHOGENY OF ANGINA PECTORIS.

ANGINA has always been somewhat of a stumblin block to the morbid anatomist, the autopsy findin are so varied and at times so inadequate. A number distinguished physicians, including Allbutt in t country, Vaquez in France, and Wenckebach Vienna, have found in aortitis an explanation of t symptoms, but aortitis could only act by produci a temporary rise in blood pressure during the attack an assumption which is by no means prove Mackenzie's theory that the pain is attributable exhaustion of the heart muscle is also unsatisfacto Anatomical evidence in many cases is in favour coronary disease being the determining factor, b this is not invariably present, and in recent yea there has been a tendency to abandon the anatomi in favour of a physiological explanation which w account for the varied post-mortem findings. T evidence in support of the physiological hypothe that angina is due to anoxæmia of the heart mus is well presented in a recent paper by C. S. Keef and W. H. Reznik,* who, following Heberde original description, define angina as a conditi characterised by pain of a paroxysmal nature provok by an increase and relieved by a diminution in t demand made upon the heart. They add that t diagnosis of angina should always imply the likeliho of sudden death. The similarity of the pain in angi to that in intermittent claudication, as well as t experimental evidence that voluntary muscles whi are made to contract when their blood-supply defective are easily fatigued, and that the contracti is accompanied by pain, strongly supports this hy thesis. Further, it is well known that anoxæmia an important predisposing cause of ventricu fibrillation. This fact will account for the frequen with which sudden death is liable to occur in th cases. In affording an explanation of the persister of the pain in coronary thrombosis the physiologi hypothesis is equally satisfactory; for in that c dition, unless the anastomoses be sufficient to co pensate for the occluded artery, the anoxæmia permanent and leads to infarction.

THE PARATHYROIDS AND BONE UNION.

MUCH attention has been paid of late to t significance of the parathyroids in metabolism, b experimental work has not yet thrown much light clinical application. The work of Collip [1] and oth has demonstrated that an extract can be obtain from these glands which can overcome the syndro of tetania parathyreopriva with its attendant l blood calcium. The injection of active parathyr extracts may in animals even lead to fatal resu accompanied by very high blood-calcium valu The older observation of Koch [2] that meth guanidine appears in the urine of parathyroidectomi dogs, and of Paton [3] and his co-workers that t

* Arch. Intern. Med., 1928, xli., 770.

ection of guanidine and methyl-guanidine in mals leads to tetany-like symptoms gave rise to theory that the parathyroids formed a part of the oxicating mechanism of the body. The view more nerally held to-day is that the parathyroids exert ne at present unknown influence on calcium metaism. Efforts have consequently been made to work their relationship to bone metabolism, particularly m the clinical aspect of the healing of fractures. was as long ago as 1907 that Erdheim [4] first orted experiments on rats which showed that, a result of parathyroidectomy, the teeth lost their low transparent appearance, and became white and aque. He noted also that there was a diminished l delayed deposition of calcium in the dentine, and t the enamel was decreased or thin or lacking. hlbaum [5] and others confirmed these results as well Erdheim's further contention that reimplantation the glands restored the teeth to normal. Other servations of Erdheim's,[6] however, to the effect t parathyroidectomy caused delay in the healing fractures were not substantiated by Hohlbaum, or Jovane and Vaglio,[7] or by Korenchewsky.[8] The ter pointed out that Erdheim's experiments were iated by lack of dietary control. Other workers, wever, have supported Erdheim's conclusions. awa,[9] for instance, investigated the relation of se glands to the healing of fractures, and reported t union was slower after their removal. Dieterich [10] o found that this operation delayed callus formation, ough X ray and histological examination proved t otherwise the process was normal in every respect. rel [11] found in cats a marked retardation in the mation of callus after parathyroidectomy, bu only young animals and not in adults.

More recent work has, however, called in question ne of the older experiments. Gates and Grant)27)[12] have demonstrated fairly conclusively that btotal removal of the parathyroids creates a ficiency which is rapidly compensated by hyperphy of the remaining tissue, and that the blood cium is restored to normal in a week to ten days. ything short of complete removal therefore is not reliable test of under-function of the tissue after s period of time. Until recently few observations ve been made as to the effect of parathyroid extracts the metabolism of bone, apart from scattered tements in the literature referring to its use in normal cases. There is some doubt, however, as the activity of the extracts employed in these ses, for it is only since Collip isolated the active inciple of the gland that definitely active preparaons have been available. Morel, however, in 1909, imed that subcutaneous injections of a parathyroid tract in young animals produced bones of twice the ickness of those in controls, regardless of the amount calcium in the food. Recent experiments with llip's extract do not support his work. Fine and own, working at Harvard, have published [13] the sults of their experiments on bone repair under e influence of the extract, and their conclusions are startling contrast to Morel's. They conclude that e clinical use of the extract for delayed bone union not based on any sound principle, can do little if y good, and in fact may do harm. The number of eir experiments, however, was small. The whole estion of the relationship of the parathyroids to ne metabolism is still sub judice, and requires more tensive research before any definite conclusions can arrived at.

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STANDARDS OF ATMOSPHERIC POLLUTION.

In the thirteenth report of the Advisory Committee on Atmospheric Pollution, to which reference has already been made, there is an interesting suggestion of the possibility of setting up limits or standards of permissible pollution. In the report the cities have been classified according to a scale of increasing pollution into four classes—A, B, C, and D. A table for the years 1914–15 to 1926–27 indicates a tendency towards improvement in many places, but unfortunately this improvement, as we have pointed out, is rather in the moderately clean than in the very dirty cities, which show little change. The important point is, however, that a step has been taken towards setting up some standard of clean air. The places classified *A* may be called clean, while the *D's* are certainly dirty. With the information now becoming available it should shortly be possible to take a most important step from a public health point of view—namely, to set up a standard of clean air, a condition of the air of a city which is to be aimed at and is reasonably attainable. So far only a standard for deposited impurity has been suggested; the limits of permissible suspended dust still remain to be fixed. Those who are engaged with these standards would find their work simplified if reliable information could be obtained as to the minimum requirements of sunlight, and especially of ultra-violet light, for healthy living. This would be a first step towards fixing limits of smoke pollution which could not be exceeded without detriment to the health of a city.

DARWIN'S KENTISH HOME.

An announcement made at a meeting of the General Committee of the British Association in Glasgow in respect of the destination of Down House, Darwin's home in the county of Kent, is of real interest to the medical profession, when we remember the fundamental revolution in our philosophy and endeavour that has followed upon Darwin's work. Mr. Buckston Browne having acquired the property from Prof. Charles Galton Darwin, F.R.S., grandson of the great naturalist, has transferred its possession to the British Association under the most liberal conditions, and with an endowment for its maintenance and preservation. Mr. Buckston Browne's public spirit and generosity which have before now obtained publicity in spite of his retiring manner of doing good, are marked, as on the previous occasions, by conditions which are calculated to extract from his open-handed action the fullest benefit. He has assured the Council that he will make himself immediately responsible for the whole gift, and that while a committee will have to consider the details, he will also furnish an endowment fund, bringing his donation up to the splendid sum of from £12,000 to £15,000. Sir Arthur Keith, President of the General Committee of the Association, has suggested that out of the endowment fund money should be expended upon the foundation of a prize to be given every second year for the best contribution to biological knowledge, to be awarded by the Council, and to be known as the "George Buckston Browne Prize." For the moment Down House serves as a private school, but as soon as the property can become an effective gift to the nation Mr. Buckston Browne desires the house to be open every day of the week between the hours of 10 and 6 without charge, while the grounds of the house, which are of considerable extent, he intends should be employed for the benefit of science. Further, certain of the rooms in the house, particularly that in which so much of the "Origin of Species" was written, he proposes should be furnished as nearly as possible in accordance with their old appearance, and already this project is in process of fulfilment through the cordial help of the Darwin family, without which, it should be said, the new ownership of the property could not have been obtained. Charles Darwin's study

chair and his machine for the weighing of letters and parcels have already been given by the late Mrs. Litchfield, a daughter of Charles Darwin, and the British Association is desirous of securing, for the transformation of the house into a veritable Darwin memorial, any articles known to have been in the possession formerly of Charles Darwin or to be associated with his literary work. Mr. Buckston Browne has commissioned the Hon. John Collier to paint replicas of the well-known portraits of Darwin and Huxley, and when the shelves of the old study are filled with all the editions of Darwin's works and the collections of original documents pertaining to these works, Down House will become a centre of research into the origin and development of the greatest intellectual movement the world has ever seen. The association of Down House with Charles Darwin and his family is extremely close. The property was presented to him by his father in 1842, three years after his marriage. His two elder children were born before the arrival at Down, but Mrs. Litchfield, and the four distinguished sons, George, Francis, Leonard, and Horace, were born at Down House. Charles Darwin died exactly 40 years after taking up his residence, in the seventy-fourth year of his age. There has probably never been one house associated with such a record of live and permanent work, brilliant in its scientific aspect and limitless in its power for good.

SAFETY AND HEALTH IN INDUSTRY.

SEVERAL points of interest to safety and health are presented in the latest annual report of the Chief Inspector of Factories.[1] First, reference is made to the opening of the Home Office Museum in Westminster where examples of good practice in safety appliances and hygienic environment are displayed. Next stress is laid on efforts to extend safety-first organisations throughout factories with workmen's committees and safety supervisors. Examples are given of excellent results attained and much expense on account of accident compensation saved. Attention in the section devoted to purely medical matters is directed to the Lead Paint (Protection against Poisoning) Act, 1926, under which the house painter is now protected. Information was received of 98 cases of lead poisoning among these painters with 21 deaths, as compared with 249 cases in all other industries with 14 deaths. Clearly the case fatality is much higher among painters. The long fight in the potteries against plumbism is being rewarded; last year only 14 cases with six fatalities occurred, compared with 78 cases in 1910 with 11 deaths. The extended use of low solubility glaze is held to be largely responsible; among 554 workers using this glaze, not one was found with signs of lead poisoning. But lead is being replaced as an occupational risk by skin troubles and particularly by epitheliomata which again accounted for 49 deaths. Pitch and tar are great offenders and caused 48 cases with 6 deaths; here periodical medical examinations to detect warts early are of the utmost value; one surgeon gives all early cases radium and only one case out of 56 has so resisted treatment as to require excision. But the chief instigator has been mineral oil which claimed 101 cases among mule-spinners with 31 deaths; preventive measures among these men have not been in force sufficiently long to be effective. Dermatitis of all kinds continues to demand attention; 525 cases were referred for inquiry. Of these, 13·7 per cent. were due to alkalies; 11·2 were due to oil, chiefly oil acne among engineers; dyes, acids, sugars, and turpentines each accounted for over 6 per cent.; french polish and paraffin each claimed over 5 per cent.; bakers' dough 4 per cent.; and accelerators of rubber 3·6 per cent. Another rival for first place among occupational risks is dust; here that composed of silica attracts particular attention on account of its slow, but specific, toxic action. Fortunately in the metal grinding industry abrasive wheels, made of carborundum, are replacing sandstones; this change is being accelerated by granting to grinders compensation for silicosis. An inquiry among 1011 cotton weavers disclosed 6·7 per cent. had noise deafness, and 19·4 per cent. of those who had worked for 21 years and over. An important first-aid order was made prescribing a grade or quality for all materials for dressings used in factories. Reviewing the report as a whole it displays throughout a greatly improved and still improving hygienic environment throughout our industries.

[1] Annual Report of the Chief Inspector of Factories for 1927. Cmd. 3144. H.M. Stationery Office. 2*s*. 8*d*.

HYPERTONIC SALT SOLUTION FOR GLAUCOMA

IN recent years much stress has been laid on osmosis occurring between the capillaries and the aqueous humour as a factor in the maintenance of normal intraocular pressure and in the pathogenesis of glaucoma. In 1926 W. S. Duke-Elder published experiments proving that intraocular tension can be temporarily lowered by the slow intravenous injection of a hypertonic solution of salt into the general circulation, and advocated this procedure in certain cases of glaucoma as a temporary measure to reduce tension prior to operation. This method had already been tried with success in four cases at Moorfields Hospital. In the report of the Madras Government Ophthalmic Hospital for 1927, edited by Lieut.-Colonel R. E. Wright,[1] there is further evidence bearing on the subject. A series of 20 cases of glaucoma patients were taken without selection, so far as the variety of glaucoma was concerned. The body-weight, blood pressure, intraocular tension and a sample of blood were taken before saline injection, and again at intervals afterwards. The hypertonic solution was injected slowly into a vein of the arm—30 g. per 100 c.cm. of sodium chloride, the dose given being in most cases 20 c.cm., which works out to an average of 0·134 g. of sodium chloride per kilogram of body-weight. Within 15 minutes of giving the injection the average fall of intraocular tension was from 46·7 to 34·2, and this fall was maintained with slight variations for 24 hours. The writer concludes that therapeutically the injection of strong sodium chloride solution is a valuable means of lowering the intraocular tension, effective in the great majority of cases, and especially valuable as a preoperative procedure; but cautiously adds that it remains to be shown whether the fall in intraocular tension is more closely connected with the osmotic pressure or with other changes in the constitution of the blood. Lieut.-Colonel Wright's conclusions are much the same as Mr. Duke-Elder's.[2] The main danger, according to the latter authority, is a sudden fall in the blood pressure which may occur during the injection, but this is obviated if the injection is made slowly and regularly, with a patient in the recumbent position.

[1] Madras Government Press, 1928.

[2] Recent Advances in Ophthalmology, p. 211.

THE Clinical Congress of the American College of Surgeons is held in Boston this year from Oct. 8th to Oct. 12th. The Hunterian Oration of the College will be delivered by the Editor of THE LANCET, Sir Squire Sprigge, upon whom the Honorary Fellowship of the College will be conferred.

UNIVERSITY COLLEGE HOSPITAL.—The annual dinner of past and present students in this the centenary year of the Medical School will be held at the Hotel Cecil, London, W.C., on Oct. 12th, at 7 P.M. The chair will be taken by Surgeon Vice-Admiral Gaskell, Medical Director-General of the Navy. Tickets may be had on application to the hon. secs. at the Medical School.

The Clinical Interpretation of Aids to Diagnosis.

Series of Special Articles contributed by Invitation.

III.—REPORTS ON SWABS FROM THE THROAT AND NASAL PASSAGES.

By J. E. McCartney, M.D., Ch.B., D.Sc.,
DIRECTOR OF RESEARCH AND PATHOLOGICAL SERVICES, METROPOLITAN ASYLUMS BOARD.

(2) Cases not Suspected of Diphtheria.

Spirochætes and Fusiform Bacilli.

The examination of a direct smear of the swab after staining with dilute carbol-fuchsin or methyl-violet will determine or negative the presence of Vincent's angina. Microscopically, numerous large fusiform bacilli with pointed ends, together with spirochætes having wide irregular coils, may be found, and this is sufficient for a diagnosis. It must be remembered that Vincent's angina and true diphtheria may occur together and that an immediate report of Vincent's angina does not exclude the possibility that diphtheria may be present as well. In the laboratory all throat swabs are cultured and examined for diphtheria bacilli as a routine, irrespective of the direct examination, so there is no danger of the more serious disease of diphtheria being overlooked.

Hæmolytic Streptococci.

Throat swabs are sometimes sent to the laboratory to ascertain if hæmolytic streptococci are present in cases of convalescent scarlet fever patients ready for discharge. Although the hæmolytic streptococcus plays an important part in scarlet fever, the presence of these organisms does not mean that the patient is capable of transmitting the disease, or that the streptococci found are necessarily the cause of the illness. Over one-half of convalescent scarlet fever patients still harbour hæmolytic streptococci on discharge. Although certain strains of hæmolytic streptococci isolated from early cases of scarlet fever appear to fall into certain serological types, yet the whole group of hæmolytic streptococci are so closely interrelated that it is not possible to identify any one type or types as the cause of scarlet fever. Therefore a positive report of hæmolytic streptococci present in scarlet fever does not have the same significance as a positive report of diphtheria bacilli in convalescent diphtheria, and does not mean that the patient is necessarily infective or that he must be kept isolated. The release from quarantine of recovered scarlet fever cases must be determined solely from the consideration of the patient by the physician and not with reference to the laboratory report, although, of course, a negative result in such cases is of great assistance in arriving at a decision.

Meningococci.

In the usual examination of a throat swab, meningococci are not specially looked for. If, however, there is an epidemic, or cases of meningitis are occurring at the time, the bacteriologist will pay special attention to the Gram-negative group of cocci found in the nasopharynx and throat, and will usually determine or exclude the presence of meningococci without being definitely asked to do so. Special laboratory tests extending over several days are necessary to isolate meningococci; if they are found to be present the patient must be regarded as a meningococcus carrier and treated accordingly.

In examining for meningococcus carriers it is not advisable for the practitioner to take a throat or postnasal swab and send it to the laboratory; the bacteriologist should be asked to take the swab himself. In the first place special postnasal swabs such as West's swabs should be employed, and secondly, owing to the feeble vitality of the organism outside the body, it is necessary to inoculate the appropriate medium immediately, and to incubate it without delay, or to keep it warm until it can be placed in the incubator. Unless these precautions are taken no reliance can be placed on a negative report. Three successive negative reports are necessary before a known carrier can be considered free of infection.

The Normal and Pathological Flora of the Tonsils and Upper Respiratory Tract.

When considering the organisms present in cases of catarrh or other inflammatory conditions of the throat the normal flora must first be considered. In normal healthy children the commonest throat organisms are the "viridans" type of streptococcus, and Gram-negative cocci of the *Micrococcus catarrhalis* group, which are almost constantly met with. In addition, a few colonies of both α and β hæmolytic streptococci, together with some colonies of staphylococcus albus, are usually present. Occasionally Friedländer's bacillus and the pneumococcus are noted. In inflammatory conditions of the throat, however, the flora becomes very much more numerous, and certain organisms, rarely or never met with normally, such as pneumococci, *Staphylococcus aureus*, hæmophylic bacteria of the *B. influenzæ* type, and diphtheroids may predominate, while hæmolytic streptococci may be very abundant.

In cultures from the throat of the healthy child the growth of organisms is not great, and the number of bacteria present in the throat secretion is comparatively small. In his report the bacteriologist will indicate the predominating organism and the relative frequency. Reports such as the following indicate that there is an abnormal change in the flora of the throat, and that the condition requires attention by the practitioner.

(*a*) "Cultures show an abundant growth of an almost pure culture of pneumococci."

While pneumonia is usually due to the pneumococcus, such a report does not necessarily indicate that the patient either has, or will develop pneumonia. A pneumococcal infection of the throat or trachea may be present, but in young children the possibility of pneumonia must not be overlooked. Careful attention should be directed towards the chest, and the possible spread of infection down the respiratory tract must be kept in mind.

(*b*) "Very numerous colonies of hæmolytic streptococci present."

Here attention should be paid to the tonsils as the likely site of the infection.

(*c*) "Numerous colonies of *B. influenzæ* developed on blood-agar."

This report does not necessarily mean that the case is true influenza, since the precise cause of epidemic influenza has not yet been determined. *B. influenzæ* is met with in catarrhal conditions of the respiratory tract apart altogether from this condition.

(*d*) "Cultures show an abundant growth of organisms comprising hæmolytic streptococci, pneumococci, *M. catarrhalis*, and *Staphylococcus aureus*."

These findings are usually noted in cases of sore-throat and "colds."

On the other hand, a report such as—

"In direct films very few organisms could be found. In cultures a few colonies of *M. catarrhalis* and *Staphylococcus albus*, together with an occasional colony of *Streptococcus viridans* developed"

indicates that the flora is normal and that the throat is healthy.

Septic Foci in the Rheumatic Diseases.

Chronic Catarrhal Conditions of the Nose and Throat.—In these cases, particularly if involvement of the sinuses is suspected, swabs should be taken from the nose as well as from the throat, while a swab from the nasopharynx should also be forwarded if possible. This latter may be obtained by bending the

wire of the swab at an angle and passing the end of the swab behind the soft palate into the naso-pharynx. The operation is facilitated if the patient be asked to phonate during the process. Vaccines are often of use in these conditions, particularly when one type of organism predominates. but failures are not uncommon.

Septic Tonsils.—Swabs from the tonsil are sometimes sent to the laboratory with a request for information as to whether the tonsils should be removed or not. Such a problem as this is outside the domain of the bacteriologist. He can state what organisms are present and their relative abundance in the material submitted; he may indicate whether such findings are abnormal, but beyond that he can give no help. He does not know how the swab was taken—whether from the surface of the tonsils or from the crypts. The report of the bacteriologist may assist the practitioner in arriving at a decision for or against tonsillectomy, but this must be reached mainly on clinical grounds.

The laboratory worker is frequently asked to give information regarding certain clinical conditions merely from the bacteriological examination of a throat swab, and it is opportune here to indicate the limitations of the information which can be supplied.

Acute Rheumatism.—Clinical experience suggests a connexion between rheumatic conditions in children and an abnormal state of the tonsils. At present it is not possible to state definitely what the causal organism of rheumatism is. A non-hæmolytic streptococcus has been thought by some observers to be responsible, but the isolation of such an organism from the tonsils has no special significance, since non-hæmolytic streptococci are almost invariably present in all throats, and, moreover, the non-hæmolytic cocci from rheumatic cases are indistinguishable by ordinary methods from similar organisms obtained from non-rheumatic conditions or healthy individuals.

Chronic Rheumatism and Rheumatoid Arthritis.—On the assumption that these conditions are due to a septic focus, often in the nose or throat, swabs are sometimes sent to the bacteriologist in order that he may isolate the offending organism and prepare a vaccine. Here again no one organism can be said to be responsible, and while some workers claim that certain types of streptococci are the cause of these conditions, nothing is definitely proved. A vaccine prepared from a certain organism may be beneficial to the patient, while the same organism may be present in a second case, and a similar vaccine be of no value. Some cases of chronic rheumatism do respond to vaccine treatment, but there are many others, apparently similar clinically, in which no benefit can be derived, even after a course of vaccines prepared from a number of organisms isolated from the nose, throat, or teeth. The practitioner therefore should realise: (*a*) that there is no one organism responsible for chronic rheumatism, or rheumatoid joint conditions; (*b*) that a vaccine or succession of vaccines prepared from cultures of a throat swab may fail to benefit the condition.

Conclusion.

In conclusion, it is urged that a greater coöperation should be maintained between the physician and the bacteriologist. The latter should be afforded full information as to the nature and source of the material submitted, and in turn he will be able to give the clinician more assistance in the diagnosis and conduct of the case.

Golden-square, Throat, Nose and Ear Hospital. This hospital, which is within easy reach of Piccadilly-circus, is about to open 20 pay beds. These will be available at a moderate weekly charge, plus a fee to the surgeon, for those patients who are not eligible for admission to the general wards, but who are nevertheless unable to meet the expenses of a nursing home. A prospectus relating to the private rooms will be sent on application to the Secretary-Superintendent.

Special Articles.

AN OUTBREAK OF BACTERIAL FOO POISONING.

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During the night of Tuesday, August 16th, 192 and throughout the 17th and 18th, 12 nurses, 1 mai and 25 patients in a hospital were suddenly seiz with vomiting, abdominal pain, and diarrhœa, usual accompanied by fever and preceded in many cas by headache, shivering, and aching pains througho the body. The symptoms were in all respects typic of food poisoning, and in most cases lasted for thr or four days, gradually abating. In a few instanc the green stools persisted for about ten days. Ons occurred in the case of the nurses during the nig and early morning of August 16th–17th and of t patients during the 17th and 18th. The sudden a simultaneous sickening of several people with the symptoms made a diagnosis of food poisoning almc certain.

The Infecting Agent.

The Particular Food Implicated and the Gener Distribution of the Outbreak.—On investigation it w found that the only item of food common to all tho affected was minced meat—cooked meat minced a cooked a second time. Most of the nurses and mai in the hospital, who, it should be noted, have no fo in the wards, had partaken of this minced meat f supper on Monday evening, August 15th, in the for of shepherd's pie. Of the 18 day nurses 12 we affected and three of the six who were unaffected d not have mince. Only one maid had mild symptom The sisters had no mince and escaped. Of t 56 patients in the wards 25 were affected; 21 them had the same mince on Monday, August 15t and Tuesday, the 16th, at the midday meal, whi four had gravy from the same meat. Only one wa inmate who consumed the mince and two who to the gravy escaped. In all cases where symptoms aro the food had been last taken within about 24 to hours previously. The meat, as originally cooked a served hot, was consumed by almost all the hospit staff without untoward effect. Also, no effec followed the eating of the same meat served col It was not until this meat was served in the form mince or gravy that symptoms of food poisoni followed. The high percentage of infection of t ward inmates and day nurses will be noted, in contra with the immunity of the night nurses and maids.

Composition of the Mince.—Unfortunately none the mince was available for bacteriological examinati when the outbreak was discovered. The utensi which had contained it had also been cleaned mo than once. The chief constituent of the minced me was beef brought to the hospital on Saturda August 13th. There was also some lamb and salt beef. The beef and lamb were first roasted, and portion of each consumed hot; a portion was al eaten cold later. The portions that remained we minced, a few scraps of salt beef being added duri the mincing, and the mince, so constituted, was serv with gravy to the children at midday on Monda August 15th. The same mince was eaten by the nurs and maids that night for supper. Some of t mince was again served with gravy to some of t children on Tuesday. So far as was known no o

raps of meat of any kind were incorporated in the ince by the cooks.

Contamination of the Meat.—The beef, from which e mince was almost entirely derived, was traced back a live beast reared at a local farm. The beast as healthy, and its flesh gave no sign of disease st mortem. Slaughter in the public abattoir, nveyance, storage at the butcher's premises, and the hospital, and its handling and preparation nerally were carried out under conditions unfavourble to casual contamination. Other portions of the rcass were sold retail to the public without causing y illness which could be traced by the most careful quiry. It must be remembered, however, that odd raps of mutton and salted beef were thrown into the incer and their varied origins were untraceable.

Possibilities of Infection in the Hospital from Human Sources.

J. M., a porter, had diarrhœa during the night of ugust 11th–12th. This continued for several days, it was not sufficient to cause him to go off duty. e lived in the lodge with his wife and had his meals ere. His meat-supply was from a different source. This an was supposed not to get any food from the hospital pply, but he visited the kitchen precincts to help to carry e food to the wards. He had not eaten any of the mince, id, in any case, this was not made until some days after was taken ill. The porter's symptoms started before the eat—making up the bulk of the mince—was actually livered to the hospital, and they occurred some days evious to the outbreak among the staff and patients. he bacterial and serological findings in his connexion will discussed later.

O. M., a nurse, was warded on August 4th as a suspected se of influenza or typhoid fever. She had symptoms osely resembling those observed in the outbreak. The ces and blood, however, were subsequently found negative all tests.

W. F., a nurse, was warded on August 14th. She had milar symptoms, which began with vomiting on Saturday ening, August 13th. She had not eaten any of the suspect ince and yet her blood showed a weakly positive reaction *Bacillus aertrycke.*

Laboratory Investigation.

Epidemiologically and clinically the symptoms ere in favour of an infection rather than an intoxication, and seemed to point to one of the Salmonella roup of organisms. Specimens of fæces and vomited aterial were collected from several of the patients r examination at the Public Health Laboratory and milar samples were also sent to Dr. W. M. Scott at ie laboratories of the Ministry of Health.

Laboratory Examinations at Cardiff.—On August 18th mples of stools were sent to the laboratory, collected om three of the patients—viz., A (M. P.), B (E. H.) and (E. C.). Samples of vomit from three other patients—iz., D (M. C.), E (S. P.), and F (C. E.), were also submitted r examination. The only samples of food available which ight possibly be regarded as associated with the outbreak ere: (1) beef dripping, and (2) fish dripping. A bacteriogical examination of these food samples for food-poisoning rganisms gave negative results.

Examination of the Vomit.—Chemical examinations for reservatives and for arsenic or other poisonous metals gave egative results. From samples D and F a series of lactose ile-salt agar plate cultures gave non-lactose fermenting olonies in practically pure cultures. The fermentation haracters and also the morphological and staining characters f several colonies from each of the samples were tested, and ll conformed to those for food-poisoning organisms of the almonella group. Agglutination tests made with 24-hour gar cultures gave strong agglutination to a high dilution of *. aertrycke* (Mutton), showing an agglutinating titre approxiating to that of the specific organism, *B. aertrycke* (Mutton) sed as a control. Negative results were given by cultures om both samples with standard *Bacillus enteritidis* aertner serum of an agglutinating titre of 100 units. The ailure to isolate any food-poisoning organisms from sample E probably to be attributed to the marked acidity of this ample.

Examination of Stools.—Samples A and B gave non-actose fermenters, more numerous on plates after incubation ith brilliant-green broth. Sample C gave negative results. number of colonies isolated from samples A and B were lly examined, as in the case of samples D and F. The fermentation characters and also the agglutinating tests were identical with those obtained above. No absorption tests for specific organisms were made, but the results indicated a strong probability that the organism was of the *B. aertrycke* type.

Serological Tests.—On August 26th, allowing a period of ten days from the acute stage of the outbreak, a number of specimens of blood serum were collected from patients and staff. Specimens A, B, D, and F were from the patients M. P., E. H., M.C., and C. E. respectively, from whom a food-poisoning organism had previously been isolated. The sera were tested for agglutinating titre against the specific organisms and also with *B. aertrycke* (Mutton). The following were the highest dilutions showing marked agglutination :—

Serum.	Specific organism.	*B. aertrycke* (Mutton).
A	+1 in 500	+1 in 500
B	+1 in 500	+1 in 500
D	+1 in 1000	+1 in 500
F	+1 in 1000	+1 in 500

Samples of sera from two members of the staff gave weak reactions, but from three others negative results were obtained as follows :—

Serum.	Oragnism F.	*B. aertrycke* (Mutton).
No. 1 (J. M.), porter	+1 in 20	+1 in 20
No. 2 (W. F.), nurse	+1 in 100	+1 in 100
No. 3 (O. M.), ,, ...	−1 in 20	−1 in 20
No. 4 (E. F.), cook	−1 in 20	−1 in 20
No. 5 (E. W.), ,, ...	−1 in 20	−1 in 20

No absorption tests were made locally, but most of the above sera were examined at the laboratory of the Ministry of Health, and none showed any specific paratyphoid B agglutinin. The organisms isolated by us from cases A, B, D, and F, and also a culture of *B. aertrycke* (Mutton), were each tested for agglutination with a paratyphoid B serum up to a dilution of 1 in 1000. Organism A showed definite agglutination to 1 in 250, whilst organisms B, D, and F, and *B. aertrycke* agglutinated to 1 in 500 dilution.

Theories of Infection.

This outbreak is a good example of the difficulty often arising in tracing the origin of food poisoning even in what might appear at first sight to be the most favourable conditions. While it was possible to isolate the organism causing the infection, and to conclude from circumstantial evidence that the article of diet involved was minced meat, yet how the original meat or the mince became infected could not be determined. It is possible that the porter (J. M.) was infected from some outside source and casually contaminated the meat or mince, although no action of his could be traced which might account for the extensive contamination both of staff and patients' diets. His stools, examined rather late, were negative, but his blood was very weakly positive to *B. aertrycke.* The conduct of the institution made fly-contamination of the meat from the porter's stools or any other source unlikely, and inquiries in the district failed to reveal any cases in the households of persons supplied with the same meat as this porter. On the whole, he must be considered a very unlikely source of contamination. An interesting feature of the outbreak was that the maids of the hospital all had mince, but only one was affected, and that very slightly; neither did any of the night nurses suffer, and yet they all had the same minced meat as the day nurses. The suspect mince, however infected, was, of course, not served from one, but from several dishes. There was one dish for the day nurses, several small dishes for the night nurses, and one larger dish for the maids—all containing the mince in the form of shepherd's pie—while each ward had its own numbered dish containing ordinary minced meat and gravy. The mince may have become contaminated during mincing by the inclusion of infected portions of meat, these portions being localised in the dishes set apart for the day nurses and patients in the wards. The fact that scraps of salt beef and mutton were mixed with the

meat during mincing confuses the picture. These portions may have carried the infection and accounted for its random distribution. None of these had done any damage when consumed in the freshly cooked state. As they were the surplus of several days' diet, salted and kept in the larder, it was impossible to trace them to their source.

Summary.

In an outbreak of food poisoning in a hospital affecting 12 day nurses, 1 maid, and 25 patients, an organism of the Salmonella group was isolated from the fæces and vomit of a number of cases. Direct agglutination tests indicated that the organism was a member of the group having type agglutinins for *B. aertrycke* and *B. paratyphosus* B. The absence of specific agglutinins for *B. paratyphosus* B ruled out this organism as a causal agent, apart from the clinical evidence. The organism isolated from the vomited material and stools of several patients was agglutinated by the blood sera of these patients in high dilution. These sera also agglutinated *B. aertrycke*, but failed to agglutinate other organisms, including those of the enteric group. The conclusion from laboratory investigations conducted at Cardiff, confirmed by the bacteriologist to the Ministry of Health, is that the outbreak was due to a food-poisoning organism of the *B. aertrycke* type. The infection was contained in twice-cooked meat served either as mince or gravy, but how it gained access to the meat could not be ascertained.

We are indebted to Dr. R. M. F. Picken, medical officer of health, Cardiff, for kindly permitting us to publish these notes.

A CENSUS OF EPILEPTICS IN SURREY.

THE Permanent Committee on Epileptics, a body representative of the various voluntary agencies dealing with epilepsy, has recently reported on the number of epileptics known to the public authorities in the county of Surrey. Copies of the full report, containing various classification tables, are available on application to the Secretary of the Committee, 296, Vauxhall Bridge-road, London, S.W. 1. The following is an abstract of the report.

The usual estimate of the incidence of epilepsy, as given in the text-books, is 2 per 1000 of the population. This would mean that at the present time there are some 76,000 epileptics in England and Wales, but no one can say that this is even approximately correct; still less is it possible to give with any exactness the proportion of the sexes, the ages, or the mental conditions of these epileptics.

This lack of any exact knowledge is a serious obstacle in any attempt to deal with the problem of the epileptic. It is obviously impossible to take a census of the epileptics in the general community of even a small section of the country. It occurred, however, to the Permanent Committee that it would serve a useful purpose to endeavour to ascertain the numbers of epileptics known to the public authorities of one county area, and to obtain details of their age, sex, and mental condition. It is thought that from the figures thus obtained it should be possible to form some more or less reliable estimate of the numbers and types of epileptics who come under the care of the public authorities of the country as a whole.

The area chosen by the Committee is that of the administrative county of Surrey together with the county borough of Croydon. Questionaires have been addressed to all public authorities in that area, and replies have been received from all with the exception of the maternity and child welfare committees of three of the smaller districts. It may be claimed, therefore, that the figures are practically complete for the area covered by the inquiry. So far as possible overlapping between the various authorities in the supply of information has been avoided.

The Gross Numbers.

Table I. is a summary of the cases returned by th respective authorities :—

TABLE I.

Authority.	M.	F.	Tota
Mental hospitals	127	144	271
Poor-law guardians	135	126	261
Local education authorities	65	67	132
Mental deficiency authorities	27	22	49
Maternity and child welfare authorities ..	6	7	13
Totals	360	366	726

It had been hoped to include the figures of epilept war pensioners in this census, but on inquiry it w found that it was impossible to separate the Surre figures from those of the much larger area in whic the county is included for statistical purposes by th Ministry of Pensions. It is understood, howeve that there are now approximately 3000 officers an men in receipt of pensions and allowances in respe of epilepsy. The population of Surrey (includi Croydon) is slightly under 2 per cent. of that of Gre Britain and Ireland, and it has been assumed therefo that 55 may be taken as an approximate estimate the epileptic pensioners in the former area.

The 726 cases of epilepsy included in the abo table are equivalent to 0·75 per 1000 of the populatio of Surrey (including Croydon). If the 55 war pe sioners, as estimated above, are added, the total 781 is equivalent to 0·81 per 1000 of the populatio of that area.

Age and Mental Condition.

Table II. gives the age and mental condition of th 726 epileptics returned by the various authorities.

TABLE II.

Age-group.	Mentally normal.	Mentally deficient or feeble-minded.	Imbecile or idiot.	Insane.	Totals an percentag
—* ..	3	—	—	—	3 (0
0– 5 ..	9	3	5	—	17 (2
6–10 ..	24	8	9	—	41 (5
11–15 ..	44	20	21	—	85 (11
16–20 ..	42	29	26	4	101 (13
21–25 ..	21	8	18	12	59 (8
26–30 ..	28	11	19	15	73 (10
31–35 ..	13	12	20	24	69 (9
36–40 ..	13	8	19	15	55 (7
41–45 ..	15	8	7	13	43 (5
46–50 ..	13	7	10	15	45 (6
51–55 ..	10	3	4	16	33 (4
56–60 ..	16	4	3	17	40 (5
61–65 ..	3	4	4	8	19 (2
66–70 ..	3	2	1	17	23 (3
Over 70	8	3	3	6	20 (2
Total ..	265 (36·5 %)	130 (17·9 %)	169 (23·3 %)	162 (22·3 %)	726

* Age not stated.

Of the 726 cases 515 (or 70·9 per cent.) are institutions, the remaining 211 living at hom Fourteen cases are said to be blind as well as epilept 6 are dumb, 4 deaf, and 6 both deaf and dum Sixty-four cases are returned as crippled or paralyse but these terms are so vague that the figure is doubtful value.

It will be seen from Table I. that the number male and female epileptics known to the vario authorities is almost exactly equal. Sex seems play no part in the incidence of the disease.

While youth and early middle life are most strong represented, it is remarkable how the numbers sufferers from epilepsy are maintained well into c age. If the generally accepted dictum be true th 80 per cent. of epileptics show manifestation of th disease before the age of 20, it would appear from th table that the expectation of life is greater than supposed. Younger epileptics, of course, would ha

better chance of maintaining themselves, and thus eping out of the scope of the inquiry, but even so e number of old people is rather surprising. Table II., wever, makes it clear that the proportion of the sane among the older epileptics is very much higher. early half of those over 50 are insane, while the cidence of insanity in the whole group is less than e-quarter.

The Authorities Concerned.

Feeble-minded children between the ages of 5 and come under the care of local education authorities; ble-minded persons of 16 or over and all imbeciles idiots of whatever age should come under the care mental deficiency authorities. It appears therefore m Table II. that the mental deficiency authorities ve, or should have, the responsibility for 271 or ·3 per cent. of the total number, while the corre-onding figure for authorities acting under the nacy Acts is 162, or 22·3 per cent. The remaining ·3, or 40·4 per cent. of the whole, are independent of her of these authorities. In other words, nearly e-half of all the epileptics known to the public thorities are quite outside the provisions of the ental Deficiency or Lunacy Acts. Of these 293 ileptics, 96 are children between the ages of 5 and . These should be dealt with by the local education thority, and educated, as the circumstances demand, public elementary schools, day special schools, or sidential special schools. For the remaining 197 the ly authority competent to give assistance or treat-ent would appear to be the poor-law authority.

It has been stated above that the mental deficiency thorities have, or should have, the care of 271 of e series of epileptics, or 37·3 per cent. of the total mber. As a matter of fact it is found that only cases are under their care, of whom 19 are in stitutions and 30 not in institutions. Of all patients rtified under the Mental Deficiency Acts it is obable that epileptics stand more in need of insti-tional treatment than any other class, and it is markable that three-fifths of even this small group e allowed to remain at home. Three of the 49, being ble-minded children of school age, should really me under the local education authority, leaving a lance of 46. Where and under whose care are the maining 225 out of the total of 271? 112 of them, l imbeciles or idiots, are in public mental hospitals, here they constitute, indeed, nearly half of the ileptic population; 108 of them are maintained by or-law authorities, 4 are returned by maternity and ild welfare committees, and 1 over school age is ported as known to a local education authority. he 108 maintained by poor-law authorities are stributed as follows:—

In epileptic institutions	47
In poor-law institutions	24
In other institutions	15
On outdoor relief	18
Boarded out	4

It will be clear, therefore, that less than one-fifth the epileptics who should come under the ficiency authorities are in fact dealt with by them; e remainder are maintained in approximately equal mbers either in lunatic asylums or by poor-law thorities. It is useless to expect any alteration in is state of affairs unless and until there is very bstantial increase in residential accommodation ovided by the mental deficiency authorities. There e 19 epileptic imbeciles or idiots of various ages and feeble-minded epileptics above school age who are t in institutions. It is probable that there are few useholds that can cope adequately with mentally ficient epileptics, especially those of the lower ades.

It appears that 62 epileptics of varying mental ades are dealt with in general poor-law institutions or firmaries. Where these institutions are large and a ecial ward can be allotted to epileptics the arrange-ent may be open to little objection. But in smaller stitutions, where these patients have to share wards ith other inmates, it would be more desirable from their own point of view and certainly from the point of view of others that other accommodation should be provided for them, either in appropriate hospitals under the lunacy or mental deficiency authorities, or in epileptic colonies.

Children of School Age.

There are 124 children of school age in the series, of whom 67 are reported as mentally normal, 27 as feeble-minded, and 30 as of still lower grade of mental defect. Table III. shows the authorities who are dealing with these children and beside it a table showing how the children should be apportioned between the local education authority and mental deficiency authority.

TABLE III.

	Distribution.	
	Present	Suggested.
Local education authority	86	94
Mental deficiency authority	16	30
Mental hospitals	9	—
Poor-law authority	13	—

Of the 94 children who should be attending school there are:—

At elementary schools	46	(48·9%)
At residential schools for epileptics	19	(20·2%)
In other institutions	5	(5·3%)
Boarded out	1	(1·1%)
At no school or institution	23	(24·5%)

(Of the 23 children at no school or institution 14 are mentally normal and 9 are feeble-minded.)

Conclusions.

It has been stated above that, including war pensioners, it is estimated that there are 781 epileptics known to public authorities in Surrey. If from this total of 781 we deduct 154 epileptics who are not in institutions and not in receipt of outdoor relief the balance of 627 should represent the number who are chargeable in one form or another to public authorities. This total of 627 is equivalent to 0·65 per 1000 of the population of Surrey (including Croydon).

Assuming the incidence of epilepsy to be the same throughout the country a ratio of 0·65 per 1000 of the population would give an approximate total of 25,000 epileptics chargeable to the public authorities of England and Wales. On the basis of Table II. above the age-groups and mental condition of these 25,000 would be as follows (Table IV.).

TABLE IV.

Mental condition.	Age-groups.			Total.
	0–5	6–15	16–70 and over.	
Mentally normal	277	2,498	6,475	9,250
Mentally defective or feeble-minded	90	990	3,420	4,500
Imbecile or idiot	172	1,035	4,543	5,750
Insane	—	—	5,500	5,500
Total	539	4,523	19,938	25,000

It may be suggested that the survey was made in an area in which the public authorities are unusually active and progressive, and that the figures for the whole country, could they be ascertained on similar lines, would be smaller. It is certainly true that within the county area there are three special institutions for epileptics—viz., one at Woodmansterne maintained by the Surrey Joint Poor-law Committee for sane female epileptics, a general epileptic colony at Lingfield, and the Meath Home for women and girls at Godalming. There is, however, no evidence that the incidence of epilepsy is likely to vary in different parts of the country, or that it bears any relation to industrial or economic conditions or to density of population. It is considered fair, therefore, to state that on the basis of the figures obtained by this inquiry, the number of epileptics chargeable to the

public authorities of England and Wales approximates, or *should* approximate, 25,000.

Salient Points.

1. The sex incidence in the series of cases is equal.
2. The proportion of the insane rises rapidly in later years.
3. Only 60 per cent. of the epileptics who come under the notice of public authorities can be dealt with under the Mental Deficiency or Lunacy Acts; the remainder are "mentally normal."
4. The mental deficiency authorities deal with less than one-fifth of the cases coming within the scope of the Mental Deficiency Acts, the remainder being divided equally between the mental hospitals and the poor-law authorities. There appears to be a need for considerably more residential accommodation for epileptics certified and certifiable under the Mental Deficiency Acts.
5. 24·5 per cent. of educable children are at no school or institution.
6. It would appear that there are something like 25,000 epileptics chargeable to public authorities in England and Wales. The problem is, therefore, a large one, and it is submitted that the points that have arisen in connexion with this survey merit careful consideration.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

The Educational Treatment of Neurasthenia.

AT a recent meeting of the Medical Society of Bucharest Dr. Ramniceanu expressed the opinion that cases of neurasthenia were rapidly increasing in number. He showed that a definite percentage of the symptoms of a neurasthenic were illusory or hallucinatory in character, and claimed that practically every phase had one symptom, complaint, apprehension, or fear, which predominated over all the others. This one predominating symptom he called the chief obsession, and stated that when this was overcome or removed either by education, by medicinal treatment, or by psycho-analysis, all lesser symptoms were either abated or were entirely relieved. He cited a number of cases of neurasthenia from his own practice, giving the chief obsession in each case, and the educational or other means used to remove it. Reference was made to the use of some modern drugs in these cases; in Dr. Ramniceanu's view the majority of patients were made worse by their administration. It was essential to get hold of the mentality of each patient and to treat the mind rather than the body.

Poisoning by Wood Alcohol.

Dr. Olteanu describes in the *Spitalul* the case of a man of 34 who presented himself at the Central Hospital suffering from acute total blindness. Investigation of the history showed that the loss of sight had come on during the second day after taking about 50 c.cm. of corn brandy, which subsequent analysis showed to contain some 15 per cent. of wood alcohol. Symptoms which had accompanied the development of the eye condition included nausea, vomiting, weakness, cold extremities, and sensations of chilliness. On ophthalmoscopic examination the optic nerves presented the picture of a neuro-retinitis of moderate intensity, and in the macular regions were disposed numerous yellowish shining spots similar to those described as occurring in choroiditis guttata. Good food, warm baths, and large doses of potassium iodide were prescribed; four months later one eye showed complete recovery of function, and the other eye presented moderate concentric contraction of the field, considerable diminution of central vision, and impairment of colour vision.

Typhoid Fever in Children.

The differences between typhoid fever in children and in adults were recently reviewed by Dr. M. Edelmann in a communication to the Oradea Medi Society. Many of the 180 cases discussed showed t relation between vomiting and hæmorrhage fi observed by Butler in the United States, especia those in whom vomiting had started at the onset the illness and had been repeated. The appearar of the stools in very young children was not characteristic as in adults, though in older childr pea-soup stools often occurred. A prelimina constipation was shown to have no evil significan Rose spots occurred in 52 per cent. of all cases, a herpes in three cases, two of which had complicatio The average duration of the fever was 18 days, much shorter period than is customary in adul The usual parallelism between the pulse and t temperature was not present in very young childr Leucopenia was mostly present and the Widal t was positive in nearly all cases where it was perform Relapses were more frequent than in adults, especia in girls. The mortality in the series of cases v 7 per cent., and was twice as high in relapses as original attacks.

The Improvement of School Hygiene.

A movement is on foot for a great extension of t present methods of medical school inspection. It championed by Dr. A. M. Marinescu who suggests t establishment of national, State, and local boards school hygiene under the direction of specia qualified medical officers. Most of the bad conditi now existing he ascribed to the ignorance of sch boards, of parents, and the children themselv The functions of a national board would be to prov plans for sanitary school buildings and school furni ings, to conduct civil service examinations for sch physicians, and to publish leaflets of instruction fr time to time. The State boards should have power to choose proper sites for schools, to frame a enforce laws governing school hygiene, to cl insanitary school buildings, to ensure the exclusion degenerate or criminal children from State scho and to keep records of the progress and developm of school-children of the State. The local bo should consist of business men and physicians, sho keep records, and should keep in touch with national and State boards from time to time. Un this scheme every child in each school would unde a complete physical examination. The functions the board would also include the distribution of lite ture bearing on hygiene and also the instruction parents as to the needs of each child, based on physical examination.

RADIUM AT THE LONDON HOSPITAL.—At the quarte court of governors last week it was reported that in respo to urgent representations from the medical and surg staff, the purchase of 210 mg. of radium for the treatm of cancer had been authorised, in addition to the 121 already possessed. This amount, with the containers, cost £2854. Last year more than 800 cancer cases w treated as in-patients and very many more as out-patie Disappointment was expressed at the result of the q quennial appeal, which has, so far, produced only £95,(Last year 10,271 patients were admitted from Lon boroughs, and about 6000 from other parts of the coun including the Channel Islands.

ST. THOMAS'S HOSPITAL.—In his annual rep the treasurer, Sir Arthur Stanley, states that the num of in-patients last year was 11,510, who stayed, on average, 18 days at a cost per head of £11 11*s.* 9*d.* New patients numbered 92,325, of whom 57,047 were casu patients. They made 580,356 attendances and cos fraction under 12*s.* 2*d.* each. The income was £190,(of which investments produced £69,000, and the expendit £183,000. Referring to the suggested coöperation of voluntary hospitals with the public authorities in provi a medical service adequate to the needs of the commun Sir Arthur Stanley expresses the hope that nothing r be done that will interfere in any way with the autono of the voluntary hospital "which has proved of s immense value in furthering improvement in gen methods of treatment, in research, in nursing, and social service."

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT CARDIFF.

(*Continued from p. 525.*)

SECTION OF DISEASES OF CHILDREN.

UNDER the presidency of Dr. ALFRED HOWELL ardiff) a discussion on

CHRONIC SPLENOMEGALY IN CHILDHOOD,

Diagnosis and Treatment, was introduced by Dr. OBERT HUTCHISON (London), who said that before oceeding to the differential diagnosis of the various lenomegalies of childhood it was advisable to ake sure that the abdominal tumour in question ally was an enlarged spleen. Usually this was easy ough, but sometimes there was a doubt, especially to the possibility of the tumour being an enlarged t kidney or suprarenal. Having settled that the mour was really an enlarged spleen it was necessary have some sort of classification of the different rieties of splenomegaly met with in childhood. An iological classification was the only satisfactory one, t was impossible in the present state of our knowlge and, therefore, for purposes of discussion, he oposed to consider the subject under certain broad oups.

Tumours were very rare and for practical purposes diagnosable.

Chronic Infections.—In tuberculosis splenomegaly as unlikely to be the "presenting sign." The lation of congenital syphilis to splenomegaly was ry important, but he suggested for the purpose of scussion that its frequency as a factor in causing at condition was exaggerated. In pre-Wassermann ys the tendency was to ascribe every splenomegaly doubtful origin to syphilis. It had been suggested Dr. Parkes Weber and others that an inherited int might form a basis on which enlargement of the leen—though not primarily due to syphilis—might velop more easily than in a normal child. Such a ew appeared very speculative. In cases of syphilitic lenomegaly in which vigorous antisyphilitic treatent did not produce any diminution in the size of e spleen splenectomy was indicated. Lymphadenoma a cause of enlargement of the spleen without any idence of the disease in the glands was very rare, d he did not see how it could be diagnosed with rtainty. Chronic sepsis had been put forward as a use of splenomegaly as of most things. That lenomegaly might be the presenting sign in cases very chronic infective endocarditis (endocarditis nta) was certain, but he doubted if cases of that ry chronic type were ever met with in childhood.

Tropical splenomegalies such as malaria and kalaar presented no difference from the adult form.

Splenomegaly in Metabolic Disease.—The part ayed by rickets in causing enlargement of the spleen d been as much exaggerated as the rôle of syphilis. vere rickets certainly led to some enlargement of the leen, but in some cases the organ was not so much larged as pushed down by the deformity of the ribs.

Gaucher's disease was rare, although not so rare as ually believed. Opinions as to the value of splenecmy were divided. The operation could not be garded as a cure because the disease affected the hole of the reticulo-endothelial system, but if the mour was causing discomfort its removal appeared be justified.

Splenomegaly in Diseases of the Blood.—This group cluded the leukæmias, splenic anæmia of infancy on Jaksch's disease), acholuric jaundice, purpura, d erythræmia. Splenic anæmia of infancy used to relatively common, but had become rare in recent ars. In considering its treatment it must be membered that the disease tended to spontaneous covery given suitable hygienic measures, and he d not consider that splenectomy was ever called for. choluric jaundice was now recognised to be of not common occurrence; its diagnosis could be established with certainty and splenectomy was the only effective method of treatment.

Splenomegaly associated with Cirrhosis of the Liver.—Excluding Banti's disease three forms could be distinguished. First, an idiopathic, non-alcoholic progressive cirrhosis (Parkes Weber) of unknown cause which resembled the ordinary portal cirrhosis of adults, ran a fairly rapid course, and often terminated in hæmatemesis. There was always some enlargement of the spleen, but in some cases this was the "presenting" sign, and such cases had been spoken of as cirrhosis with "splenic predominance." The diagnosis from Banti's disease was not easy, and some writers —J. H. Thursfield, for example—maintained that splenectomy was almost invariably fatal, but he was not at all sure that such a view was correct. Secondly, a syphilitic cirrhosis with splenomegaly was met with in later childhood and did not always give a positive Wassermann reaction. Splenectomy might be justified if antisyphilitic treatment failed. And thirdly, splenomegaly with biliary cirrhosis (Gilbert and Fournier), believed to be the form which Hanot's cirrhosis took in the child. He was very sceptical as to the occurrence of Hanot's cirrhosis at all, and still more sceptical as to its occurrence in childhood.

Splenomegaly the Result of Splenic Thrombosis.—Wallgren had drawn attention to thrombosis of the splenic vein as a cause of splenomegaly in childhood, and believed that it was commoner than supposed, but was usually confused with Banti's disease. The leading features of the syndrome were splenomegaly, anæmia with leucopenia, and slight ascites. Sooner or later hæmatemesis set in, and after a bleeding the volume of the spleen shrank and a temporary leucocytosis occurred. The liver in all the cases which came to autopsy was found to be normal. The prognosis of these cases was bad unless splenectomy was performed.

Splenic anæmia of adult type and *Banti's disease* were to some extent diagnostic rag-bags. Seeing that the splenic anæmia of adults was a very prolonged disease, the final stage of which was only reached after some years, it followed that the full syndrome was not likely to be met with whilst the patient was still a child, but in spite of this he thought the diagnosis in childhood of Banti's disease was sometimes justified. The difficulty was to distinguish this disease from cases of idiopathic cirrhosis "with splenic predominance," and this could only be done if the history showed that the spleen had been enlarged for some years before signs of cirrhosis supervened. It was sometimes asserted that the presence of leucopenia put a case in the category of splenic anæmia rather than of idiopathic cirrhosis, but with this statement he could not agree because in his view leucopenia tended to be a feature of most chronic splenomegalies. The treatment for splenic anæmia of the adult type was splenectomy, but it was a matter for discussion as to whether the operation was worth doing after cirrhosis had supervened.

With regard to treatment, debate, said Dr. Hutchison, must chiefly centre round the question of splenectomy. He agreed with Parsons that the cases suitable for operation were those which showed a negative Wassermann reaction, no enlargement of the lymph glands and no characteristic leucocytic picture, but in which there was some degree of anæmia, associated with (1) leucopenia, or (2) increased fragility of the red cells, or (3) hæmatemesis. There might, however, be differences of opinion as to the advisability of splenectomy in Gaucher's disease and in cases of cirrhosis of the liver whether of the idiopathic or Banti variety, even although these fell within the limits of the above criteria.

Discussion.

Mr. L. E. BARRINGTON-WARD (London) said that from the surgical standpoint enlargements of the spleen fell into two categories. In the one group removal of the spleen cured the disease or produced a definite amelioration of symptoms; in the other splenectomy offered some hope of improvement, but without any prospect of producing a real cure. In the first class could be placed acholuric jaundice and

thrombo-cytopenic purpura. The second class was made up of more debatable material, but he advocated early splenectomy in Banti's disease before ascites developed. In Gaucher's disease if the spleen were large and producing abdominal discomfort he thought removal should be practised. Splenomegaly due to thrombosis of the splenic vein was difficult to diagnose and could only be recognised with certainty at operation or autopsy. The difficulties of splenectomy in this condition were very great. With regard to the operation of splenectomy blood transfusion was essential both before and after operation. He had not had any experience of preliminary irradiation of the spleen in children, but this procedure had been well spoken of in leukæmia by W. S. Mayo. Gas and oxygen was the anæsthetic of choice. Happily the common conditions, for which removal of the spleen was required in children, presented no great difficulties.

Prof. LEONARD FINDLAY (Glasgow) pointed out that it was only possible to estimate the palpability and not the size of the spleen, because conditions such as hypernephroma, retroperitoneal sarcoma, enlargement of the liver, or a deformed chest would displace an enlarged spleen. He agreed with the opener that there was not any enlargement of the spleen in rickets unless that disease was complicated by tuberculosis, syphilis, or severe thoracic deformity. He had on one occasion found a palpable spleen as the only evidence of tuberculosis, but the diagnosis was only made as the result of splenic puncture, and he had also seen a case of lymphadenoma in which, except for anæmia, splenomegaly was the only manifestation of the disease, the diagnosis being made at autopsy. Whilst he agreed that the incidence of congenital syphilis had been overestimated yet in the presence of anæmia and splenomegaly that disease must be eliminated by a negative Wassermann reaction. Splenectomy did not interfere with the course of von Jaksch's anæmia, but after splenectomy in that disease the number of leucocytes diminished whereas they increased after splenectomy for other conditions. Of the two cases quoted by Dr. Hutchison as examples of cirrhosis of the liver with splenic predominance and Banti's disease respectively, he thought that either case might do for either condition. There was a great deal of confusion about Banti's disease, but Banti himself had stated specifically that cirrhosis of the liver was present in the early stages of the disease; there should, however, be no confusion as to the methods of arriving at the diagnosis of the cause of an enlarged spleen, which were: a complete blood count, an estimation of the fragility of the red cells, a Wassermann reaction, and splenic puncture. Without splenic puncture it was impossible to separate Banti's from Gaucher's or Hodgkin's disease, tuberculosis, &c.

Dr. C. P. LAPAGE (Manchester) in his remarks dealt chiefly with cases of Jaksch's anæmia which had been under his care. The frequency of this disease, which occurred chiefly in the artisan classes, had diminished considerably but was now increasing again. Two cases had occurred in one child of each of two pairs of twins. Many had suffered from digestive disorders and many showed signs of rickets. He did not consider the latter a causal factor nor was there anything to suggest that the disease was due to syphilis. The blood showed a secondary anæmia which varied from time to time. He had been able to follow up some of his cases and all of those examined were in ordinary health, the blood and spleen being normal. He hesitated to recommend splenectomy and thought that in all cases arsenic, benzene, and, perhaps, liver extract should be tried first, but if the child was not very ill and the course of the disease a protracted one, splenectomy was advisable.

Dr. J. WILKIE SCOTT (Nottingham) said that in cases with splenomegaly and hæmatemesis he found it difficult to differentiate splenic thrombosis from cirrhosis of the liver. He had recently seen two patients who when apparently healthy had an acute hæmatemesis followed by a rise of temperature and slight ascites. In both instances splenectomy was performed with successful results. Thrombosis of the splenic vein was not found at operation, and h thought the hæmatemesis was due to an active and no a passive hyperæmia, possibly caused by a per splenitis.

Dr. HILDA STOESSIGER (London) described a cas of Banti's disease occurring in a boy aged 14. Th patient had suffered from abdominal discomfort du to the presence of an enlarged spleen for some months there was slight anæmia with leucopenia and th Wassermann reaction was negative. A lævulos tolerance test showed marked hepatic insufficiency Splenectomy was performed and at operation the live was noted to be cirrhosed. Two years later the patien was well, but the onset of puberty was delayed. Th liver was enlarged and still showed marked inefficiency

Dr. LEONARD G. PARSONS (Birmingham) agreed tha the diagnosis of an enlarged spleen might be difficul and quoted a case in which a mass of tuberculou glands presented under the left costal margin an showed typical splenic notches. He had listened wit great interest to Dr. Hutchison's remarks on th differentiation of Banti's diseases from cirrhosis of th liver with splenic predominance, and he agreed wit Prof. Findlay's criticism of the cases quoted. As fa as he (Dr. Parsons) could judge the only point o difference between the two conditions was that th cases of "splenic predominance" ran a more rapi course than those of Banti's disease. Splenomegal with thrombosis of the splenic vein described b Walgren was not mentioned as a cause of enlarge spleen in the discussion on this subject at the Roya Society of Medicine in 1925, but two of the case described by him (the speaker) as instances of Banti disease had been claimed as examples of the Walgre type. He asked whether Mr. Barrington-Ward recom mended the removal of spleniculi if found during th operation of splenectomy in acholuric jaundice and the gall-bladder should be examined for gall-stone as recommended by Sir Berkeley Moynihan.

Dr. E. A. COCKAYNE (London) pointed out tha although removal of the spleen for acholuri jaundice cured the symptoms, yet it did not cure th disease. He asked if irradiation of the spleen ha any curative effect on this disease, and also if th method of treatment produced adhesions and thereb rendered any subsequent operation more dangerous Splenic anæmia of the adult type, if diagnosed, shoul be treated by removal of the spleen because it was primary splenic disease, but there was no method o accurately diagnosing the condition. Some cases o cirrhosis of the liver ran a very protracted course an this, he thought, accounted for some of the suppose cures of hepatic cirrhosis after splenectomy. Sinc hepatic cirrhosis was a primary liver disease a cur could not be expected by performing splenectomy.

The PRESIDENT said that occasionally patient suffering from acholuric jaundice showed a normal red cell fragility. He also referred to the occurrence o pigmentary concretions in the gall-bladder in thi disease, pointing out that Mayo had found these i three out of five cases.

Reply.

Dr. HUTCHISON said he quite realised the difficult in deciding into which category a case should be pu but if the splenic enlargement had been known to b present for some years before cirrhosis of the live developed the case should not be classed as one o idiopathic cirrhosis.

CHRONIC NEPHRITIS IN CHILDHOOD.

The subject was opened by Dr. J. C. SPENC (Newcastle-on-Tyne), who said that from the stand point of morbid anatomy there were no forms o chronic nephritis which were peculiar to childhoo but there were certain clinical features about th disease in children which deserved attention an which might throw some light on some of the obscu problems of the subject. For the purposes o description and discussion it was necessary to attemp some form of classification. Three main groups o the condition occurred in childhood, and these differe

m each other very widely and were best considered separate diseases. These were: (*a*) chronic interstial nephritis; (*b*) chronic parenchymatous nephritis, cluding nephrosis; and (*c*) chronic ascending elonephritis. It was true that the latter was not primary disease of the kidney, but it impaired the nal function in the same way as chronic interstitial phritis and so was likely to be mistaken for it. ronic hæmorrhagic nephritis was not included cause such cases were probably recurrent attacks of ght acute glomerular nephritis.

Chronic interstitial nephritis was at one time regarded a great clinical rarity and Leonard Guthrie, in 96, could only collect seven cases under the age of ; since 1911, however, when Fletcher, Parsons, d Miller drew attention to the fact that the disease ght result in peculiar bony changes and dwarfism, great number of cases had been recognised. He lieved that there were three clinical types of this ndition in children. There were, however, certain mptoms common to them all. The symptoms might ise from infancy onwards, but usually advice was t sought for several years, and then a history of irst, polyuria, anæmia, and arrested development uld be obtained. On the other hand, an attack of æmia might be the first warning of the condition. well-established cases the patients were usually naciated, with coarse, dry, and pigmented skins, d were liable to repeated attacks of uræmic vomiting d headaches. There was no mental defect. If varfism and bone changes were present they might of an extreme degree. Bone changes were not likely appear in those cases which ran a rapid course wards a terminal uræmia, but only in those which n a long course and in which the renal function was uch impaired. Polyuria was a prominent symptom. he amount of albumin was variable and often so ght as to be overlooked. Casts, leucocytes, and red lls were to be found in the urine. The blood pressure ight be normal throughout, high throughout, or come so during the course of the disease. Renal tinitis might be absent throughout, even although ie patient died in uræmia. Renal function tests monstrated great loss of function in all cases of renal dwarfism" and "renal rickets." It was on rtain combinations of these symptoms and signs at he proposed to divide cases of chronic interstitial phritis into three types.

Type 1.—A primary renal type without history of acute phritis, or preceding sepsis. The chief features of this pe were that the onset of the disease was unrecognisable, at it had a slow course, and that renal dwarfism developed. here was marked azotæmic nephritis, the blood pressure ually remained normal, and retinitis was not present. ttacks of tetany might occur, and the terminal uræmia as that described as true azotæmic nephritis, an undramatic cture of muscular twitchings, vomiting, and coma.

Type 2.—A primary renal type with a history of acute omerular nephritis, or prolonged sepsis. In these cases ithin a few years of the initial illness there was found a gh blood pressure (150 to 200 mm.), cardiac hypertrophy, buminuria, with numbers of red cells in the urine, azotæmia, d retinitis. The course of the disease in these cases was ually a rapid one.

Type 3.—A primary arterio-sclerotic type with secondary ntraction of the kidneys. Cases in this group showed a eliminary stage of high blood pressure which was often und to be over 200 mm. when the patient was first seen. he blood urea was, however, normal and there was only a ere trace of albumin in the urine. Later there was cardiac ypertrophy, retinitis, and a tendency to "uræmia of the rebral type," with transient amaurosis, monoplegia, and nvulsions. Later still albuminuria and some azotæmia veloped, and death occurred from heart failure or oplexy.

Renal rickets and tetany in chronic nephritis were ie result of a metabolic disturbance which accomanied azotæmic nephritis, but which did not yield the usual antirachitic remedies; indeed, one of is cases was thrown into uræmia after exposure to ltra-violet ray treatment. Frank tetany was not mmon, but in many cases latent tetany could be emonstrated by the presence of Chvostek's sign. In zotæmic nephritis there was a retention of phosphorus nd often a fall in the calcium of the blood, but in some cases of renal rickets the fall in blood calcium did not occur. It was reasonable to believe that the bony changes and the tetany which might be present were dependent on the disturbance of the phosphorus-calcium ratio of the blood and tissue fluids.

Chronic parenchymatous nephritis or nephrosis was the commonest form of chronic nephritis. Müller coined the term "nephrosis" in 1905, maintaining that the kidney lesion was a degeneration and not an inflammation. Now it appeared that the disease was not primarily a kidney disease at all, but a general disease with "an abnormal permeability of the cutaneous and renal vessels for albumins and lipoids referable to changes of metabolism," so the most recent fashion was to call it "lipoid dystrophy of the kidneys." The only evidence that the clinical condition was due to a disease of the kidneys was the occurrence of albuminuria and casts in the urine, but there were cases on record in which the œdema preceded the urinary findings. Some held that the œdema was due to the retention of chloride, but de Wesselow had shown that the kidneys were quite capable of passing and concentrating the chlorides if they were given the opportunity. These cases rarely ran an uncomplicated course and were peculiarly liable to secondary infections, and at such times a glomerulitis with hæmaturia and nitrogen retention were superimposed. With regard to treatment, Marriott maintained that the disease was due to a toxin which damaged the tissue cells, causing them to absorb more chloride from the blood, so producing œdema. The toxin was usually the result of a staphylococcal infection of the mastoid or paranasal sinuses, and therefore this writer advised a very thorough examination and exploration of these sites and reported rapid cures after sinus drainage. Osman had revived the using of large doses of alkalis as a method of treatment, and this should be tried in obstinate cases, but it should be remembered that it often produced severe vomiting and tetany. The disease was so liable to fluctuations that it was difficult to assess the value of any particular form of treatment, but it was commonly agreed that a high protein diet was beneficial, that decapsulation of the kidney was useless, and that it was imperative that every patient with nephrosis should be guarded rigidly against the development of intercurrent infections in case an acute hæmorrhagic nephritis developed.

Chronic Ascending Pyelonephritis.—Most cases of acute pyelitis, if promptly diagnosed and treated, made a satisfactory recovery, but there were more chronic cases which remained in ill-health and were liable to recurrences of fever and pyuria. In a few of the latter a permanent damage of the kidney resulted and the failure in renal function showed itself as an advancing azotæmic nephritis ending in uræmia. If the condition was sufficiently prolonged these patients developed renal dwarfism. In such instances the question as to whether there was some chronic obstruction or deformity of the urinary tract which was the cause of the infection must be considered. One of the most striking examples of ascending pyelonephritis was due to a valvular obstruction in the posterior urethra of male children, of which quite a considerable number of cases had now been diagnosed and successfully treated.

Discussion.

Dr. NORMAN B. CAPON (Liverpool) said he wished to lay down two propositions. First, that in any particular case of nephritis the lesions were diffuse; and, secondly, that the renal efficiency tests were not of very great assistance and were of little real value in treatment. Every case of chronic nephritis represented a kidney which was the seat of repeated acute attacks. Emerson had pointed out that chronic nephritis was not the result of one, but of a thousand and one acute attacks. The treatment of chronic nephritis in general was a dismal thing, but in the treatment of chronic hæmorrhagic nephritis—the commonest form of nephritis—there was a little more ground for hope. Effective treatment of tonsils, teeth, or any other infective focus did more to allay

the course of the disease and limit the number of recurrences than any other method.

Dr. COCKAYNE, who was in the chair, stressed the importance of discussing treatment because if, for instance, nephrosis was due to infection it obviously could be effectively treated.

Dr. PARSONS pointed out that in one type of renal rickets—the "stippled" type—primary optic atrophy was not uncommon and was probably the result of pinching of the optic nerve in the foramen. With regard to the suggestion that the parathyroids might be connected with the bone changes and the absence of tetany, the Section might be interested to know that he had given parathyroid hormone for some time to a child suffering from "renal rickets" with the result that her blood calcium was raised to a higher level, and in the radiogram the rickets appeared to be increased. Owing to the normal variations of the disease, however, it was not possible to say whether this was cause and effect. It was, however, clear that the hormone should not be used in the treatment of tetany in renal rickets, and it was also important to avoid making use of acid sodium phosphate because this drug was likely to produce an attack of tetany in these children.

Dr. HUTCHISON said that Dr. Spence was particularly well fitted to open the discussion because he was a biochemist as well as a physician. The difficulty in discussing the subject was the question of classification because the more chronic was the case the more likely were the lesions to be diffuse. He wondered whether the primary renal type was a true renal disease. Might not the renal changes and the rickets be both manifestations of a metabolic disorder? He had never seen the primary arterio-sclerotic type in a child, and he doubted whether the condition was, as generally stated, a primary vascular disease with secondary renal changes, and he suggested that the glomeruli at least were affected. He noticed that the opener had not said much about casts in the urine, and he asked if any importance was to be attached to these because he himself thought that granular and blood casts were of great importance. He did not believe that staphylococcal infections were the cause of chronic parenchymatous nephritis, nor had he ever known decapsulation of the kidneys do any good. Quite dramatic results, however, sometimes occurred in that disorder as a result of tapping if the œdema was very marked. In many cases after treatment by dieting and diuretics had failed, tapping not only removed the fluid but a spontaneous diuresis had occurred and the dropsy did not return.

Dr. WILKIE SCOTT said he had recently had two cases of the arterio-sclerotic type which threw some light on the cause of that condition. Both cases had retinal changes and normal blood urea, and both at the onset had hæmaturia, a fact which suggested that this type was the result of an acute, perhaps slight, hæmorrhagic nephritis. He had been impressed with the number of times a slight hæmaturia was found in patients who were in hospital for nasal disorders, and which was only discovered by routine examination. He also quoted another case in which there was marked œdema and ascites but no albuminuria until within a day or two of the child's death, and at the autopsy the kidney showed the lesion of a typical chronic parenchymatous nephritis.

Dr. LAPAGE was convinced of the septic origin of many cases of chronic nephritis, and that not enough attention was paid to dieting. Many cases were kept on too low a diet, thereby preventing recovery.

Dr. D. T. DAVIES (Cardiff) agreed that the study of uræmia in childhood was one that promised to be of great value. In the primary renal type there was a conspicuous absence of respiratory symptoms, and also for long periods of time the blood urea was high, even as high as 300 mg. per cent., without any symptoms of uræmia. When uræmia occurred vomiting was a marked symptom, and this was one method of excreting urea, for he had found as much as 600 to 800 mg. per cent. in the vomitus. Another point to remember was that osseous changes were not invariab present.

Dr. A. MONCRIEFF (London) said that there we two ætiological factors in chronic nephritis—t vascular and the infective. The vascular factor h been emphasised by Volhard, who said that t glomerular vessels were affected in exactly the sa way as the vessels of the skin by chill. The vess contracted, nutrition was cut off, and death a degeneration followed by fibrosis occurred. Infecti caused kidney damage in one of two ways: strept coccal emboli might affect the glomeruli produci acute hæmorrhagic nephritis, or toxins might affe the tubules and produce a chronic parenchymato nephritis. The vascular cases were difficult to trea but it might be possible to do something for t infective ones. It should be remembered that lipoid nephrosis the kidney was choked with fat, whi interfered with filtration just as filter paper wh soaked in fat delayed filtration; therefore it w essential to give a low fat diet in the treatment of t disease.

Dr. HOWELL quoted a case of the primary ren type which had recently been under his care and whi had died from uræmia. This case was sent up to t orthopædic department for treatment of knock-kn and showed other evidence of renal rickets. The opt discs in this case were pale, although he could n say that there was any actual atrophy.

Dr. H. GAINSBOROUGH (London) said he dislik the term "lipoid nephrosis" because he did not kn what a "lipoid" was. Nor did he see any reason f giving a fat-free diet in cases of this disorder, becau cholesterol was not a fat.

SECTION OF RADIOLOGY AND PHYSIO-THERAPEUTICS.

ULTRA-VIOLET LIGHT AND THE GENERAL PUBLIC

Prof. W. E. DIXON (Cambridge) outlined the natu of radiation and said the different rays so far as th have been mapped extended through 62 octav Visible sun rays occupy only one octave. Beyo the violet rays of visible light are five octaves ultra-violet rays which are invisible. Solar radiati contains a few of these, something less than o octave. On the other side of the solar spectrum a the infra-red rays, about seven octaves, of which sol radiation contains three or four. Sun rays have be used in the treatment of disease for long ages, b during the last 30 years precise observations have be made of their action in disease. The proof is comple that they exert a curative action in cases of surgic tuberculosis, rickets, and in some cases of nerve diseas anæmia, and skin disease, but atmospheric conditio alter the action of sunshine to some extent. Th the presence of water vapour acts in much the sa way as a fire screen which lets us see the fire but cu out the heat.

It is generally believed, said Prof. Dixon, that it the violet and longer ultra-violet rays that possess t greatest curative value, because these are especial prevalent in the sunshine of mountainous distric and near the sea where they become refracted a reflected by the sand and water. If the short ultr violet rays were the most important, then the mercur vapour lamp, in which they are very rich, ought be the most effective treatment. Rollier, the pione of sunshine treatment, regards the light waves the most important, and abundant pigmentation a sign that the patient is deriving benefit. Othe believe that the value of heliotherapy is the dire effect of the power of the rays to produce redne of the skin. All skin contains a substance call ergosterol; when this is acted on by ultra-violet ra it is changed chemically and the changed substan acts as a preventive and a cure for rickets. that in this particular instance ultra-violet is a important. Regarding general benefit, however, we know for certain is that sunshine exerts a curati action in certain diseases, and that this is not d

the action on the disease directly, but to an action the skin, and only indirectly on the disease. In e various lamps employed for the artificial produc- n of ultra-violet rays the spectral distribution varies eatly. Sunlight at sea-level contains less than 2 per nt. ultra-violet rays, but in a water-cooled mercury- pour lamp the ultra-violet rays may rise to 50 per nt., and the spectral quality is different from that the sun in that it contains a large proportion the short and more physiologically active waves, that with such an artificial source the skin is bjected to rays of a quality foreign to natural nshine. In his opinion the carbon arc was the arest approach to the natural sun. Sunlight, ra-violet rays, and infra-red rays all cause the skin turn red at first, and if the dose is repeated or plonged to become pigmented later. Pigmentation m lamps is more superficial and transient than that duced by sunshine. Apart from its action on the n, ultra-violet radiation gives a feeling of well- ing and vigour. Many other effects on metabolism ve been ascribed to ultra-violet rays, but he did t believe they were specific. The skins of patients fer in their reactions towards light, due probably the presence of a sensitiser. But quite apart m this natural sensitiveness the condition can be quired. The application of powerful ultra-violet ys alter the proteins of the skin. These abnormal teins are absorbed, and an allergic condition arises which the skin becomes intolerant to light. Thus, e importance of correct dosage cannot be over- ggerated, since burns may lead to light allergy.

Much of the literature in the advertisements on lamps leaves the impression that they are a panacea all disease. In reality, very many patients are t benefited by this treatment, and some may suffer ury. The radiations from ultra-violet lamps, hich emit rays of shorter wave-length than those nd in the solar spectrum, when applied to the n, are just as foreign to the body as to be com- rable with the administration of a poisonous drug; ether may be beneficial in a suitable subject but rmful in an unsuitable. Few of us would dare to ve a prescription containing poisons dispensed an untrained person, but the dispensers of rays uncontrolled, unregistered, and may be unqualified. the present time all kinds of rays are used by rlatans in Europe and America to impose on the blic. Sun ray institutes are becoming the fashion, l the public is buying machines and indulging in -treatment. Already action has been taken in nce and America, and an endeavour is being made control this form of treatment and prevent its iscriminate use, and he thought it was obviously ht that the public in this country should be given h information as will enable them to distinguish ween those who have been properly educated to pense rays, and others.

"I have endeavoured," said Prof. Dixon, "to w that treatment by radiation may be either eficial or harmful; that its employment by killed people may cause serious ill-effects to the ient, and that the time has come when some sort protection must be extended to the public."

Dr. C. B. HEALD (London) said there was ample dence that electrical treatments could do harm; l he commended the resolution passed by the presentative Body a few days previously.[1] He anced cases where fatalities had occurred with ch lower voltages than those in general thera- utic use. With regard to the ignorant applications X rays and radium, it was not necessary for him dwell on the dangers both to patient and rator. But he pointed out that special courses l diplomas in radiology and electrotherapeutics medical men had been instituted, and the possession such a diploma was essential in many hospitals the appointment of radiologist. Coming to a-violet light, he said an argument sometimes anced is: "Control X rays, radium, and obviously dangerous things like that if you like, but surely no one can do much harm with an ultra-violet lamp. At the worst, all that can happen is an uncomfortable sunburn." That idea he most strongly condemned. Prof. Dixon had shown the dangers of ultra-violet radiation, and public interest demanded imperatively that it should only be used by trained and experienced persons. He had examined the evidence of damage by ultra-violet light treatment from the contributions of many writers. He mentioned three of the ailments that had been adversely affected—quiescent phthisis, arterio-sclerosis, and chronic nephritis—and asked how the unqualified therapist was to recognise these conditions. Many of the contra-indications to ultra-violet treatment are such that the qualified doctor finds it hard to detect their presence, and there was certainly not the least hope of the unqualified detecting them before damage was done. He thought the formation of a roll or register of persons regarded by a competent authority as suitably qualified to administer medical electricity as a matter of urgency. It would enable those of the public who cared for their own safety to be sure of their therapist. It would also be of great value to doctors who would thus be able to select a suitable assistant to whom to send their cases. The duly qualified among the medical electricians would welcome it, if for no other reason than that it would protect them from the unfair competition, backed by advertisement, of those who have spent neither time nor money in acquiring skill and experience and who are not bound by any ethical rule of modesty or truthfulness.

Discussion.

Dr. OWEN L. RHYS (Cardiff), who presided, thought the most striking point brought out by the introducers was that here was an agent with potentialities of danger still largely unknown.

Dr. A. J. H. ILES (Taunton) said that a penal clause regarding unqualified practice should certainly be imposed and that it should be also made illegal for a registered electrotherapeutist to employ people who themselves were not qualified. It should also be made clear that if a medical practitioner sent his cases to an unqualified electrotherapeutist he would be responsible if any damage resulted.

Dr. MARIA ARMSTRONG (Ballymena) asked how far responsibility rested with the prescribing physician. In a cottage hospital with which she was connected, "artificial sunlight" lamps had been instituted, and the committee had thought that the treatment might be in the hands of the masseuse, who, by her own admission, knew nothing about light treatment and was not even qualified in electricity. The doctors, however, had refused to allow the treatment to be placed in the hands of this woman, or to be responsible for mistakes made by her.

Dr. P. W. HAMOND (Croydon) said that this matter had been discussed in the Representative Meeting, and the conclusion arrived at was that no absolute rule could be laid down, and that if legal proceedings resulted, each case would have to be decided according to the circumstances.

Dr. GARFIELD EVANS (Cardiff) considered that there should be a definite course of training undertaken by the people who were going to administer light treatment, and that a register should be set up.

Dr. T. MARLIN (London) said that he had refused to instal a mercury-vapour lamp (although it was very convenient for treatment) because he felt that this was an agent of which so little was known.

In reply to a question as to whether the proposed registrants would be required to be medical men or qualified physicists, Dr. HEALD said that, in his view, a registrant should be required to produce some evidence of qualification such as the B.Sc. in physics, and should undertake that he would not act except under medical guidance as to treatment

Prof. DIXON agreed with Dr. Heald. It was the function of the physician, he said, to diagnose and then to prescribe treatment, but in a number of cases the treatment required was of a very special kind

[1] See THE LANCET, July 28th, p. 194.

which the physician himself might not have the time, or perhaps the skill, to carry out. The physician did not make up prescriptions; they were made up by skilled people called chemists. If a medical man decided on ultra-violet light treatment he should put down on the prescription the light source, the area to be irradiated, the time, and so forth, and the administration of the treatment should be carried out by people trained in a particular way; that they should not be unskilled people was perfectly obvious.

SECTION OF DERMATOLOGY.

UNDER the presidency of Sir ROBERT BOLAM a discussion on

URTICARIA

was opened by Dr. R. HALLAM, who said that this complaint was both common and distressing. It served to impress on the dermatologist the fact that a change in the skin was often the expression of some pathological process in another part of the body, and that a knowledge of the latest advances in biology and physiology were necessary for its elucidation and treatment. Urticaria was not a disease but a symptom. Urticaria factitia or dermographism might or might not be accompanied by urticaria vulgaris but, curiously, did not irritate. Lewis had ascribed the wheals of both to the release of a histamine-like substance from the cells of the skin, though the cause of the exaggerated susceptibility of the patient with urticaria factitia was not clear. Its incidence was higher in epileptics and alcoholics, although it occurred in perfect health. Acute urticaria might follow some dietetic error and be accompanied by more or less severe constitutional symptoms. The chronic recurring form, however, was that which most exercised the skill and patience of the physician. True urticaria was not common in children, but papular urticaria, or lichen urticatus, was usually classified with it and was peculiar to childhood. A curious feature was that patients recovered directly they were admitted to hospital, even without treatment, and their rash recurred on discharge. Anaphylaxis did not always explain the reaction, and the term "sensitisation" had therefore to be used for the inexplicable predisposition to react to stimuli which had no effect on a normal individual. The antigen might be ingested, inhaled, or absorbed through the skin with identical results. The susceptibility apparently existed in the serum and was transmissible to offspring. When once sensitivity to one antigen was established, sensitiveness to others seemed to follow. The diversity of the causes of urticaria had long been recognised; Dr. Hallam thought that focal sepsis played a far greater rôle than food protein. Every case must be approached with the greatest circumspection and each system must be examined. Trauma might be an exciting cause. Should the offending antigen be detected, desensitisation might be attempted. Of empirical remedies, calcium salts were disappointing. If the exciting cause could not be discovered, thyroid extract was worth a trial.

Biochemical Investigation.

Dr. H. W. BARBER (London) discussed the biochemical investigations of Mr. G. H. Oriel and himself into allergy, which he characterised as the most important biological and medical problem that had ever existed. It represented the pathology of the reaction of man and the lower animals to their environment. It seemed clear that in the ichthyosis-asthma-hay-fever-eczema-prurigo-urticaria-migraine syndrome, in which there was almost invariably a strong family history, there must be some inborn metabolic kink predisposing the victim to become sensitised to various proteins. Dr. Oriel had discovered an "ether reaction" in the urine of certain cases of cardiac failure and also in urticarial subjects. The connexion between the two was probably some degree of hepatic insufficiency or some common factor concerned with the production of tissue œdema. The reaction was also positive in other allergic patien and in toxic jaundice; this supported the hepa theory of its cause. The amino-acid content of t blood had therefore been estimated, and found to high in untreated allergic patients, especially duri attacks, but to return to normal when the conditi remitted or was cured. Only a small number estimations of urea, uric acid, and creatinine h been made, but these non-protein nitrogeno substances seemed also to be raised during the acu paroxysms. The rise in amino-acid might be part accounted for by the presence of toxic amines of t histamine type, or might be merely an indication the disturbance of endogenous protein metabolis All allergic attacks were accompanied by almo complete suppression of chloride excretion, whi became excessive immediately after recovery. T total blood chlorides were markedly diminishe whereas the serum chlorides might remain normal i.e., there was a reduction in the corpuscle content chloride. In simple urticaria the chloride reducti occurred during the attacks and was apt to return normal in the intervals. Deposition of urates oft occurred. This was not related to concentration acidity but to the state of the urine colloids, a was always an indication (except after excessi sweating) of a temporary functional metabol disturbance. To summarise the findings in t blood: just before and during the paroxysms the was a rise in amino-acid content, in uric acid, a creatinine, and a fall in total chloride—chiefly that the corpuscles. In the urine there was a rise in fr acidity; in ammonia excretion (the ratio of fr acid to ammonia was altered); in specific gravit owing to diminished water excretion; in excreti of amino-acid, creatinine, and uric acid. There w a retention of chlorides; urates often deposited cooling; and ether reaction was strongly positi After the subsidence of the paroxysm all these w reversed, diuresis occurred, and the urine oft became alkaline.

Very large numbers of controls and of patients wi all varieties of allergic disease had been tested a the results had been remarkably constant. It w probable that the increased ammonia excretion a the reaction of chlorides were protective mechanisn These investigations suggested certain principles treatment based on the idea that the central fac in allergy was hepatic insufficiency. These princip had proved successful clinically, and were of wider application than at first appeared; it wo enable us to prevent light sensitisation and the aft effects of treatment by deep X rays, arsenic, bismu and gold, as well as the more strictly allergic conditio

Discussion.

Dr. H. C. SEMON (London) asked why aller phenomena did not occur more often in cases undoubted hepatic insufficiency, and in what otl diseases the investigations had been made. Cert cases of urticaria reacted very well to calcium injec intravenously; others to autohæmotherapy a protein shock, which was rather difficult to explain Dr. Barber's hypothesis.

Dr. W. J. O'DONOVAN (London) pleaded for a m careful definition of "allergy" and of "hepa insufficiency" than Dr. Barber had allowed. Th were multitudinous ways of injuring the hum system but few reactions, and he thought the way reacted was Mendelian. There might be many cau for one disease which was a pattern reaction.

Dr. J. BEATTY (Cardiff) thought that liver insu ciency was too big a thing to have attributed t one group of diseases alone. The liver was a microco of the body and would be disordered in any form disease. Ephedrine might have an effect on intra able cases of urticaria, and atropine might be e better. Identical results would follow the prolon administration of any kind of protoplasmic pois It was a local skin weakness that determined onset of urticaria rather than any other reaction t protoplasmic poison released by hepatic inadequa

After several questions Dr. BARBER, in reply, pointed out that they had not claimed to have discovered the cause of urticaria, but had simply investigated the biochemistry of the allergic state. The causation was a much more complicated matter. Allergic symptoms were common in liver disease—prurigo and itching, for example. One of the functions of these allergic people was wrong, either from heredity or some other cause. Amino-acid estimations had been done in a very long list of other diseases. There was an initial acidosis in allergic states, and bicarbonate of soda might stop this. The calcium factor entered in relation to the vegetative nervous system; the irritability of the sympathetic largely depended on the calcium content. Protein therapy acted by desensitisation and preventing anaphylaxis. The liver was in some way responsible for anaphylactic shock, which could not be produced if the liver were cut out. He had used ephedrine and atropine, which undoubtedly acted through the parasympathetic system, on which the symptoms depended. Adrenalin acted on one phase only of the anaphylactic state. He thought it unjustifiable at present to speak of treatment.

Dr. HALLAM, in reply, expressed sympathy with speakers who had asked for guidance in treatment, but said there was no other way than to go systematically through the possible causes. He had been disappointed in autohæmotherapy. Cases varied very much and often got well by themselves; he agreed that many were due to a *B. coli* leak through pelvic adhesions.

THE STEAM CAUTERY IN DERMATOLOGY.

This, said Dr. SEMON, was a most valuable destructive agent, especially when associated with vigorous use of the sharp spoon. It was better than diathermy, because there was no fear of breakdown of the apparatus, which was portable, cheap, and independent of lighting circuits. The penetration of heat was very slow, about an inch a minute, and it was therefore possible to determine when normal tissue had been reached and save penetration of cartilage or mucous membrane. Open ether should be avoided because of the open flame, and local anæsthesia was the best. The only hitch he had encountered was blocking by chalk deposits from the water; either distilled water should be used or the pipes should be cleared periodically with a piece of wire. There was never any charring, and a constant heat was well maintained and bleeding easily controlled, provided the apparatus was cleaned from time to time of the altered blood that crusted on to it. A striking feature was the absence of consecutive pain. The steam cautery was indicated for any accessible epithelioma, specially where cartilage and mucous surfaces were involved and X rays and radium therefore futile. It was useful for lupus verrucosus if the horny layer were previously macerated with salicylic acid plasters for a few days. The tuberculous nodule was blackened by the cautery and stood out against the white scar tissue. Soft chancres and chancroids were very amenable, and the steam cautery would probably prove the method of choice for them. Granuloma pyogenicum and intractable papillomatous leukoplakia of the tongue had been cured (THE LANCET, Oct. 8th, 1927). The tissue to be destroyed must be soft and free from horn, so that warts and unmacerated verrucose tumours were excluded. The coagulability of the tissue was important, therefore moles and fibromata were not amenable, but anthrax pustule and Delhi sore probably would be. The wound must be kept dry until the slough separated; ambrine was good for the raw stage and red lotion or scarlet red might be applied if the granulation were poor. There had been very few complications.

Dr. J. E. M. WIGLEY (London) suggested that electrical heating of the water would be more convenient, and mentioned the danger of local treatment of carcinomata, with which infected glands were so often associated.

Dr. SEMON, in reply, pointed out the value of being independent of electrical circuits and agreed that only local growths should be treated locally. The steam cautery was better than the knife in that it closed channels rather than opening them.

THALLIUM DEPILATION FOR RINGWORM.

Dr. WIGLEY recorded the treatment of 50 out-patient cases of both sexes, aged between 18 months and 9 years. Depilation had been spontaneous only in 50 per cent., and growth had been much more rapid than after X rays. On checking the cures by Wood's glass inspection he had found that many macroscopically normal hairs showed fluorescence, and the microscope revealed infection along their length. Hairs infected with endothrix but with unbroken cuticle failed sometimes to fluoresce. X rays might fail but the failures were not deceptive, whereas those of thallium were. Moreover, it was impossible with out-patients to be certain of the vigorous local treatment essential during the depilation stage of thallium treatment. The older the child the more certain were the toxic symptoms. Physicians should be very chary of risking permanent damage to the growing organism for a treatment that was by no means a certain cure. There was great risk of reinfection of the growing hair, and he preferred X rays from every point of view.

Dr. BARBER agreed that thallium was very dangerous for older children though useful for young ones, who were unsuitable for X rays.

Dr. HALDIN DAVIS (London) doubted whether there remained any field for thallium; everyone agreed that it was dangerous to a child over 6, and younger children could be treated by X rays if given a 20-gr. dose of bromide the night before, the morning before, and half an hour before treatment. This was better for them than the "psychic trauma" of forcible restraint.

Dr. SEMON did not agree. The results of bad X ray treatment were appalling, and he had never heard of a fatal case of thallium poisoning. Toxic phenomena were probably due to keeping the hygroscopic acetate too long.

Dr. O'DONOVAN had abandoned thallium. The occasional catastrophes were no more reason for abolishing X rays than anæsthetic deaths were for abolishing chloroform.

Dr. HALLAM agreed with Dr. Semon, but thought both methods were bad. He had had 13 failures out of 42 out-patients treated with thallium, and seven had had severe toxic symptoms. Patients did much better if kept in bed throughout the treatment. The dosage ought always to be checked by a third person.

Dr. J. T. INGRAM (London) had had only three failures in 48 cases treated with thallium and would continue to use the drug for selected cases. Only one child had had toxic symptoms, and she had been over 8 years of age. It was important to have the patient under careful supervision during the period of depilation.

The CHAIRMAN agreed that neither method was satisfactory, but still kept an open mind for thallium.

ILL-EFFECTS OF SALVARSAN.

Dr. O'DONOVAN said that there were no clear and recognised ill-effects of salvarsan therapy; ill-effects might follow small doses of any brand and might appear at any time. Alarming lists of untoward symptoms had been recorded, including headache, shivering, vomiting, dyspnœa, palpitation, fainting, cramps, diarrhœa, cardiac distress, jaundice, urticaria, and many other dermal reactions, Reynaud's syndrome, uterine hæmorrhage, epileptiform seizures, epistaxis, and hæmaturia. Many cases were lost sight of through dissociation of clinics from general hospitals and practitioners. Dr. O'Donovan then gave details of a case of post-salvarsan melanodermia, another of maculo-melanodermia with follicular hyperkeratosis in a French polisher, and a third of multiple subcutaneous abscesses associated with arsenical exfolia-

tive dermatitis; over 40 "cold" abscesses had been opened and had yielded *Staphylococcus aureus*. Another patient had developed cutaneous and subcutaneous necroses, perforation of the nasal septum, and arsenical exfoliative dermatitis; his urine had contained *B. proteus*. Another man had had exfoliative dermatitis, had become very ill with fever and albuminuria, and his nasal septum had perforated. During convalescence he had had small boils and had then died of pulmonary embolism. Dr. O'Donovan felt it important that these uncommon ill-effects should be known, so that the practitioner learned not to use salvarsan unless there were facilities for transferring patients to hospital.

Dr. BARBER asked if Dr. O'Donovan had tried preliminary large doses of glucose and alkali in sensitive cases; he believed this would prevent many toxic effects.

Dr. HALLAM asked if sodium thiocyanate had been used for the dermatitis; he himself had not been quite satisfied with it.

The CHAIRMAN recalled extraordinary pigmentations after the dermatitis, and concluded that most of the dermatological troubles were due to too frequent doses of the drug.

Dr. O'DONOVAN, in reply, said he had no idea which patients were going to prove susceptible. It was not the poor, half-starved patients who proved sensitive. He had no confidence in sodium thiocyanate, though he continued to use it.

Corrigendum.—In the discussion on the Treatment of Diphtheria (THE LANCET, Sept. 8th, p. 517) Dr. E. W. Goodall is reported as having tried antitoxin in doses up to 200,000 units. The figure should have been 100,000 units.

Obituary.

CRESSY LIVINGSTON WILBUR, M.D. NEW YORK.

THE death of Dr. Wilbur from pneumonia on August 9th has removed America's pioneer vital statistician. He was in his sixty-fourth year, having been born at Hillsdale, Michigan, the son of Rodney Wilbur and Frances Cressy. He studied medicine at the University of Michigan, qualifying from the Bellevue Hospital Medical College of New York in 1890, and from 1893 to 1905 he was in charge of the Division of Vital Statistics of the Michigan State Department of Health. It was Wilbur who drafted a model vital statistics law and helped to secure its adoption by several of the American States; he was also responsible for the standard death certificate now in general use. From 1906 to 1914 Wilbur was Chief Statistician of the Division of Vital Statistics of the U.S. Bureau of Census and it fell to his lot to edit two international manuals of causes of death. In 1914 Dr. Hermann Biggs, then newly appointed to the position he made so famous, secured the services of Wilbur for New York State, but failing health compelled him to resign this post two years later. Dr. Wilbur leaves many indelible impressions of his foresight and energy in the statistical legislation of the United States.

NANCY MABEL HIELD, M.B., B.S. LOND.

Dr. Nancy Hield, who died at her home in Highgate on Sept. 6th, was born in 1899, the younger daughter of the late John Heaton Hield and of Harriet Hield. She entered the London (Royal Free Hospital) School of Medicine for Women in 1917, and qualified M.B., B.S. Lond., in the spring of 1923, having also in this time passed the Primary Fellowship Examination. She was among the prize winners of her year, obtained a resident post at the Elizabeth Garrett Anderson Hospital immediately after qualification, and became successively house surgeon and casualty officer at the Royal Free Hospital, and house surgeon at the Cancer Hospital. She was later appointed clinical assistant to surgical out-patients at the Hospital for Sick Children, Great Ormond-street, and medical officer to the North Islington Welfare Centre. In 1925 she became M.R.C.S. Eng., L.R.C.P. Lond. She took a keen interest in her profession and particularly in the surgical side of it. It was while acting as surgical registrar at the Royal Free Hospital during the summer of 1927, and working for the Fellowship of the Royal College of Surgeons, that she became aware that her health was definitely impaired, and it was decided that she should undergo an operation for the removal of a thoracic growth. Later a definite diagnosis of lymphadenoma was possible. It was a cause of great distress to her that she should be compelled to relinquish any of her work, and in spite of considerable difficulties she continued part of it up to within a few weeks of her untimely death. A friend writes:—

"Though Dr. Nancy Hield was devoted to her profession, and an indefatigable worker, she had a zest for enjoyment, and shared fully in the diversions of her friends, whether at the hospital or in the home circle. She enjoyed dancing and tennis, and pleasant outings and pretty things, and of private theatricals she had an extensive experience. She was endeared to her many friends by a lively sense of humour, never more happily exercised than in describing experiences in the hospital casualty department. Responsibility put on her naturally impulsive and affectionate nature a certain reserve; but below that reserve lurked an unfailing sympathy with misfortune and suffering, and the warmest attachment to her chosen friends, among whom must be numbered a cocker spaniel, 'Mr. Brown,' acquired just before her last illness declared itself. Nancy Hield had strong opinions, especially on professional matters, and expressed herself with directness and force on such questions as the desirability of co-education in the medical schools. She was not tolerant of insincerity or false sentiment and apt to be impatient of obstructions. Perhaps for this reason even her closest friends were surprised by the stoic fortitude with which she faced a situation she knew must end fatally for herself. The nature of her illness could not be a mystery to her, but she bore with quiet dignity, through long distressing months not only physical suffering but the knowledge of untimely closure of a career which had been full of promise and interest. She never let her courage or composure fail. It was as if she had resolved that her profession, which had no reason to be ashamed of her career, should also have no reason to be less than proud of her at its close."

JOHN DAVIDSON, M.B. Lond., whose death occurred last month at his home in Uxbridge, was born in 1858. He received his medical education at King's College Hospital, where he qualified M.R.C.S. Eng. and L.S.A. in 1879 and took his M.B. Lond. with honours in 1881. He served the hospital as resident accoucheur and also as house surgeon to Lord Lister. In 1882 he became a junior partner in a firm of practitioners at Uxbridge and in due course was appointed medical officer to the Uxbridge Joint Isolation Hospital and to the Hillingdon and Uxbridge Cottage Hospital, a post he held for 36 years. Dr. Davidson worked in Uxbridge for over 40 years, and on his retirement in 1925 a presentation was made to him by his patients and friends. His professional activities did not exclude other interests. He was an amateur actor and elocutionist of some merit and played cricket and bowled with enthusiasm and skill. He was a well-known climber and a member of the Alpine Club.

DR. EDWARD JOHN PARRY, who died at his home in Dinas Powis on Sept. 3rd, aged 78, studied medicine in Edinburgh and qualified L.R.C.P., L.R.C.S. Edin. in 1879, becoming M.D. R.U.I. in 1881. On settling down to practice in his native country he

as appointed medical officer to the Garw Valley ollieries, and remained connected with these colries until 1916, when he resigned on grounds of health. Dr. Parry was keenly interested in the lfare of miners and in the educational facilities ailable for their children, and did his utmost to prove conditions of hygiene in the mines. He was J.P. of Glamorgan for many years, and at the time his death was one of the senior magistrates in the unty. During the war he acted as chairman of e Medical Recruiting Board for Glamorgan. He s a member of the first county council elected for amorgan and served on several other public bodies the county.

Dr. HENRY WILLIAM JACOB died at Malvern on igust 31st after a long illness. He had practised in lvern since 1895, and of recent years had devoted ich time to municipal affairs as chairman of the oan district council. Born in Dublin in 1866, . Jacob studied science and then medicine at inity College, Dublin, taking his M.A. with a gold dal in natural science in 1890. He qualified D., B.Ch. and B.A. in the same year, and became nedical resident at the Adelaide Hospital, Dublin, d later house surgeon to the General Hospital, rmingham. He practised at Taunton for a few ars, when he acted as honorary physician to the unton and Somerset Hospital, and then moved to lvern, where he soon became interested in the vement for developing the town and extending amenities. His policy on the urban district ncil was progressive and vigorous, and the improvent in housing conditions and the provision of a blic park and swimming baths in Malvern are gely due to his influence.

DONATIONS AND BEQUESTS.—Mrs. R. M. Bradshaw, Mold, Flint, left £1000 to Liverpool Royal Infirmary for endowment of a bed in memory of her late husband, Thomas Robert Bradshaw, consulting physician to infirmary.—Mrs. F. W. L. Giles, Netherhall-gardens, mpstead, left, subject to the life interest of her son, the mate residue of her property, about £10,000, to be plied for the general purposes of the mental hospital wn as Cheadle Royal, Cheadle, Cheshire.—Miss E. M. uson-Thue, of Bournemouth, left the bulk of an estate over £85,000 to charitable institutions. Amongst the uests were £1000 to the Victoria Hospital, Bournemuth, for an "Edith Clauson-Thue bed": £1000 to the ler Hospital, Greenwich, to endow a "William Clauson-Thue bed" in memory of her father; £500 each to the don Homœopathic Hospital, the Royal Blind Pension iety, and the London Association for the Blind; £250 h to the British Home for Incurables, Streatham, and Infant Orphan Asylum, Wanstead. After the death of gatee the Hospital for Children, Great Ormond-street, London Orphan Asylum, Watford, the Hospital Consumption, Brompton, and the Evelina Hospital, thwark, will each receive £720.—Mrs. A. Archer, rnemouth, left £300 to the Royal Victoria and West nts Hospital.—Mr. David McCausland, Belfast, left the due of his property to his wife for life and then £1000 h to the Victoria Hospital, Belfast, the Ulster Hospital Women and Children, the Children's Hospital, Queenet, Belfast, the Incorporated Cripples' Institute, and Barnardo's Homes.—Dr. Frederick Durham left £100 h to the Royal Medical Benevolent Fund, the Royal pital and Home for Incurables, Putney, and the thampton General Hospital.—Mr. William Foley, ningham, left £1000 to a legatee for life and then to be ded between the Birmingham General Hospital and en's Hospital, Birmingham. The residue to his wife for and on her death, after other bequests, one-fifth each to Royal Cripples' Hospital, Birmingham, the Birmingham Midland Eye Hospital, the Birmingham and Midland pital for Women, the Birmingham General Dispensary, one-fifth between the Birmingham General Hospital Queen's Hospital, Birmingham.—Mr. Henry Charles mers, of Forest Hill, London, left £500 to the London pital and £3000 to such charitable institution or institus (and in such proportions) in England as the executors select.—Sir William Forrest, of Leeds, left £1000 each he Leeds General Infirmary and the Bradford Infirmary, £500 to the Bradford Eye and Ear Hospital.—Mr. J. Boothroyd, chairman of the Board of Management he Southport Infirmary, is contributing £1000 towards cost of the extension of the institution.

Correspondence.

"Audi alteram partem."

EPIDEMIC (LETHARGIC) ENCEPHALITIS.

To the Editor of THE LANCET.

SIR,—From your leading article of June 30th (p. 1333), and your annotation of Sept. 1st (p. 457) on the later manifestations of this disease, it is evident that if we trace the after-histories of a group of patients who have suffered from an acute illness recognised as lethargic encephalitis, the conclusions we must come to are gloomy enough. The position, however, is even more serious than these analyses would suggest. If the relative numbers coming under my own observation are approximately those occurring over the whole country, there are a large number of cases who present no such history of initial illness and are, it seems, liable to escape timely recognition. They labour under some such diagnosis as "nervousness," "neurasthenia," "muscular weakness," or even, as in one case which came under my notice, "a puir cratur." Many of them are such a burden on their relatives that it is not to be wondered at if domestic sympathy is often strained to breaking point.

As you rightly point out, there are several different organisations under whose care these unfortunates may come and it is to be feared that each one, having other sheep to tend, may hope to see the unprofitable ones fed by another flockmaster. It is not inapposite to call these sufferers sheep, because their bearing suggests nothing else so much as that of a dumb animal. Indeed, they seem bereft of those very characteristics which have established man's supremacy in the animal kingdom. They even have difficulty in maintaining the erect posture. Here is a disease capable of taking frightful toll of its victims in mental deficiency and even criminal lunacy. It is notifiable and it is an undoubted fact that notification creates the impression that the body responsible for the care of a patient is the public health authority. That this is so in the acute stage, when the disease assumes epidemic proportions, is clear, but the real problem, and the lasting problem, is the care of the chronic encephalitic. When he is a certifiable lunatic, with or without criminal tendencies, he is comparatively easily disposed of. It is in the stage preceding this that he is so difficult to deal with and to the majority of these patients, I believe, benefit would accrue from institutional treatment. There is no occasion to put them in the infectious diseases' hospital; the voluntary hospitals are full and overflowing with patients of every description and the parochial hospitals do not carry either the atmosphere or the personnel to treat satisfactorily so highly specialised a condition. What is wanted is a hospital devoted to it alone.

The available accommodation under public authority at present is deplorably inadequate, and the matter is one of some urgency. In the last few months I have noted an instance of a girl standing in risk of her life in the middle of a crowded thoroughfare completely "mazed" who, when asked what she was doing, replied, "Would you show me the way to the infirmary?" Another case was that of a young man found wandering on the railway. Both of these are chronic encephalitics and I have no doubt such occurrences could be duplicated all over the country. It can scarcely be anticipated that effective prevention against this disease will appear for many years, and I would like to see the establishment at suitable points of encephalitic settlements. Scarcely a week passes but that some country house, whose owner feels the burden of existing rates too heavy, comes into the estate market. The acquisition and utilisation of such houses, each accommodating, say, 50 patients, would not, I think, be an insuperable difficulty. At

present it is impossible to do anything to restore the broken faculties of the encephalitic and any measures designed to prevent the onset of complete mental decrepitude in these sufferers are worthy of sympathetic study.

I am, Sir, yours faithfully,

Dundee, Sept. 7th, 1928. J. M. STALKER.

*** The situation is to some extent met in London where the Metropolitan Asylums Board has for the past three years allotted 100 beds at the Northern Hospital, Winchmore Hill, for children 3–16 years of age suffering from the after-effects of epidemic encephalitis. These beds, it seems, are now not fully occupied.—ED. L.

THE LATER RESULTS OF PARTIAL GASTRECTOMY FOR GASTRIC AND DUODENAL ULCER.

To the Editor of THE LANCET.

SIR,—In Mr. Flint's letter (p. 478) it is stated that no less an authority than Sir Berkeley Moynihan "has never seen an anastomotic ulcer develop after primary gastrectomy" for gastric ulcer. I have had one such case under my care.

A woman, aged 42, was operated upon by myself on May 23rd, 1923, for a gastric ulcer high up on the lesser curvature by the antero-Polya method. She remained perfectly well for two years. In June, 1925, she commenced having pain after food on the left side of her abdomen radiating round to the back. During these attacks, which lasted about three weeks, she vomited and thus relieved the pain. She vomited blood on two occasions. The intermissions between the attacks varied from four to six weeks. After admission to hospital X ray examination showed nothing very definite, but the history was so suggestive that on June 29th, 1926, a few days after blood transfusion, I operated upon her again. I found definite thickening of the anterior surface of the anastomosis in its lower third near the greater curvature of the stomach and extending into the jejunum. No definite ulcer could be felt, there was no narrowing of the orifice, there was no ulcer in the stump of the stomach. I excised the thickened portion and to the naked eye it appeared a typical anastomotic ulcer. It was examined at once by the pathologist, who reported that he thought a fragment of foreign body was present (? thread). Microscopically there was granulation tissue with many giant cells, but no definite ulceration was found. I reconstructed the anastomosis and made an entero-anastomosis between the entering and returning limb of the jejunum.

I have heard from this woman to-day stating, "since my operation in 1926 my health is generally much improved. I have had no pain or indigestion since." This is the only case that has come under my notice in a considerable number of gastrectomy cases for chronic gastric ulcer. Thread was used in this case for stitching the sero-muscular coats.

I am, Sir, yours faithfully,

Sheffield, Sept. 5th, 1928. ERNEST FINCH.

BLEPHARITIS SUCCESSFULLY TREATED BY AN AUTOGENOUS ANTIVIRUS.

To the Editor of THE LANCET.

SIR,—A woman sent to me for bacteriological treatment by one of the surgeons of the Central London Ophthalmic Hospital had been troubled with blepharitis for a number of years. For some time past the disease had been getting worse, so that when I first saw her it had reached a stage when it was seriously interfering with the ordinary routine of her life. Staphylococci were the only bacteria demonstrated in material taken repeatedly from the inflamed areas. Treatment was carried out by four distinct bacteriological methods, only one of which proved efficacious. The first method used was the administration of subcutaneous inoculations of stock polyvalent staphylococcus vaccine. This vaccine, having failed to produce any improvement in the condition, an autogenous vaccine was made and administered without any more favourable result. It was then determined to try the effect of Besredka antivirus therapy. A stock antivirus was employe and handed over to the patient with the instructio as to its application. Although this particular batc of antivirus had given promising results in simil cases on former occasions, it failed to ameliorate th condition. At this stage the patient became sceptic as to the value of any treatment, and it was difficu to persuade her to continued efforts. However, sh consented to have an autogenous antivirus prepare and applied, and within 24 hours of its first applicatio in the form of a lotion to the affected parts improv ment in signs and symptoms became manifes Persistent treatment has led to what appears to be cure of the condition.

In view of the intractable nature of the disease i question the case appears worthy of notice. affords a near approach to a crucial experiment. Th element of suggestion can certainly be eliminate since the patient's faith had been reduced to minimum or even to a negative quantity by a seri of failures. The results obtained in this case, couple with experience in other less dramatic cases, sugge that treatment by autogenous antivirus preparatio should be tried in certain forms of eye disease.

I am, Sir, yours faithfully,

W. E. M. ARMSTRONG, M.D.

Weymouth-street, W., August 28th, 1928.

PAPWORTH COLONY AND SANATORIUM TREATMENT.

To the Editor of THE LANCET.

SIR,—Certain newspapers appear to have given t impression that in my address at Dublin I attack sanatoria, but I can assure Dr. Walters that this w not the case. What I did say, and indeed have be saying for years, is that in a great number of cases t benefits of sanatorium treatment alone cannot be mo than temporary and that the village settlement is after-care scheme which meets all the requirements the consumptive worker. Papworth exists entir because it was found impossible for patients to foll the advice of the profession after they had h sanatorium treatment and returned to their hom Public opinion and economic necessity are the princi enemies of the discharged sanatorium patient. Papworth neither enemy is present, and consequent we are able to see what happens when the advice the medical profession can be followed. That t results have been so entirely satisfactory is a welco indication that the profession has made no mistake this matter. The only difficulty is to convince peo that to maintain sanatoria without village settlem is to put into practice only half the advice of t profession, and therefore to achieve results wh cannot help being grossly disappointing.

I am, Sir, yours faithfully,

P. C. VARRIER-JONES,
Medical Director, Papworth Village Settlement

Sept. 6th, 1928.

INSOLATION IN PULMONARY TUBERCLI

To the Editor of THE LANCET.

SIR,—May I recall the attention of my colleag to a point in the treatment of phthisis which see to me in process of being overlooked—namely, t direct sunshine is a source of danger to patients w have not been warned to keep out of it? Doct who only occasionally see cases of pulmonary tuber do not get the opportunity of noting the deplora results which may follow one "sun bath," and t in a patient who before was doing well in ev way. Certainly, medical students do not recogn the danger, for they use the phrase "plenty of s light" when prescribing treatment, and the sa idea is conveyed in some of the smaller text-bo of medicine. As a patient in two sanatoria I h

een pyrexia, increased sputum, pleurisy, and æmoptysis follow the first spell of fine summer veather, and I have observed in myself increased anguor and malaise. Later on in summer, when the kin has become heavily pigmented, the risk of harm rom the sun may be less, and for some reason harm s less likely to follow from walking in the sun than itting in it; but the danger to many patients is lways there, and those who have learned by experi-nce prefer to sit in the shade.

I am, Sir, yours faithfully,

August 30th, 1928. M.R.C.S.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified:—

Surg. Comdrs. E. B. Kelley to *Champion*; W. P. Vicary o *Erebus*; and M. J. Aitken to *Calliope*. Surg. Lieut.-Comdrs. S. R. Johnston to *Caradoc* (on recommg.); S. G. Rainsford o *Centurion*; R. W. Nesbitt to *Victory*, for R.N. Hospital, Haslar, temp., and as medical Specialist; F. L. H. McDowel, T. N. D'Arcy, A. G. Bee, C. H. Savory, and G. G. Newman to *President*, for course of instruction; nd T. Madill to *Victory*, for Royal Marine Infirmary, Portsmouth. Surg. Lieuts. E. V. Barnes to *Erebus*; A. A. Pomfret to *St. Vincent*; R. W. Mussen to *Danae*; E. J. K. Weeks to *Victory*, for R.N. Barracks, Portsmouth; H. W. Strong to *Fisgard*; W. J. Doody to *Calliope* and to *Cleopatra*; N. A. Hopkins to *Pembroke*, for R.N. Hospital, Chatham; D. M. Beaton to *Sutton*; P. H. Deeny to *Endeavour*, and on recommg.; D. R. Campbell to *Suffolk*; O. Watson to *Iroquois*; A. P. Anderson-Stuart to *Benbow*; and L. P. Sayers to *Godetia*.

Entries: M. A. Graham-Yooll has been entered as Surgn. Lieut., R.N., for Short Service, and apptd. to *Victory*, for R.N. Hospital, Haslar, for course of instruction, and R. E. G. Richmond has been entered as Surgn. Lieut., R.N., for Short Service, and apptd. to *Victory*, for R.N. Hospital, Haslar, for course of instruction.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Comdr. A. E. W. Hird, V.D., to *Victory*, for R.N. Hospital, Haslar, for training.

Proby. Surgn. Sub-Lieuts. R. M. B. Lewis and D. M. Craig to *Victory* for R.N. Hospital, Haslar, for training.

Surg. Lieut. H. G. Ungley, to *Victory*, for R.N. Hospital, Haslar, for training, and R. Russell to *Victory*, for R.N. Hospital, Haslar, for training, and to *Tiger*, to complete training.

ROYAL ARMY MEDICAL CORPS.

Maj. (Bt. Lt.-Col.) (temp. Col.) G. de la Cour, O.B.E., to be Lt.-Col., and to be supern. in that rank whilst holding the appt. of Consulting Surg. to the British Army.

Capt. A. H. Clarke, M.C., to be Maj. (Prov.).

The undermentioned to be temp. Lts.: G. F. Maher, A. R. Cowan.

General List: C. H. Wilson (late Surg. Sub-Lt., R.N.V.R.), to be Lt.

MILITIA.

Capt. L. A. B. Moore to be Maj.

ROYAL AIR FORCE.

The undermentioned Flying Officers are promoted to the rank of Flight Lt.: C. W. Coffey, J. Hutchieson.

Flight Lt. E. J. Mockler is granted a permanent commission in this rank.

INDIAN MEDICAL SERVICE.

Lt.-Col. S. H. Middleton-West, M.C., retires.

COLONIAL MEDICAL SERVICES.

H. R. Dive, Medical Officer, Federated Malay States, has been promoted to be Senior Medical Officer, Pahang.

The following appointments are notified: N. Chilton, Medical Officer, Tanganyika Territory; R. F. Pinson, W. Hunter, C. E. G. Nunns, Medical Officers, West African Medical Staff; F. J. Farr, Radiologist, Electrologist, Medical Dept., Hong-Kong; A. J. McKinlay, Assist. Medical Supt., Lunatic Asylum, Barbados; A. W. Carleton, Colonial Surgeon, St. Helena.

ST. MARY'S HOSPITAL (PADDINGTON) RUBBISH COLLECTION FUND.—This fund, which was started on July 1st, 1927, had by the end of the year produced £380. The annual report asks the public to notify the hospital when old clothes, linen, &c., are available for collection.

Medical News.

UNIVERSITY OF LONDON.—The Connaught Hall of Residence at 14, Bedford-place, London, W.C. 1, recently presented to the University of London by the Duke of Connaught, will be ready for students of any of the colleges and schools of the University at the opening of the session in October. Mr. W. S. Angus has been appointed warden and Miss Burnett matron.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At a meeting on Sept. 3rd, Sir Arthur Keith, F.R.S., was admitted to the Honorary Fellowship, and Dr. Samuel McMahon to the Fellowship, after examination.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—The anniversary dinner will be held at the Hotel Victoria, Northumberland-avenue, at 7 P.M., on Wednesday, Oct. 3rd.

ROYAL DENTAL HOSPITAL OF LONDON.—The dinner of the past and present students will be held at theTrocadero Restaurant (Empire Rooms) on Oct. 20th, at 7 P.M. Mr. G. G. Campion will preside.

CHARING CROSS HOSPITAL MEDICAL SCHOOL.—Prizes will be distributed in the Out-patients' Hall of the hospital by Dr. T. Watts Eden on Thursday, Oct. 4th, at 3.30 P.M., to be followed by a reception at the school.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—The winter session will open on Tuesday, Oct. 2nd, when the introductory address will be delivered at 3 P.M. in the Queen's Hall by Mr. A. E. Webb-Johnson. Prizes will be distributed by Prince Arthur of Connaught, and Princess Arthur will present the Fardon Memorial Medals. The annual dinner will be held the same evening at 7.30 P.M., at the Savoy Hotel, when the chair will be taken by Prince Arthur.

THE first number of a new monthly journal, intended to keep members of the medical profession in touch with the latest developments in artificial sunlight therapy, medical radiology, and electrology, will be published on Oct. 1st, under the title, *The Actinic Practitioner and Electrotherapist*. Price 6*d*. Publishing offices at 139, High Holborn, London, W.C. 1.

MINERS' HOSPITAL, CAERPHILLY.—Extensions estimated to cost £40,000 are now being made to the Miners' Hospital, Caerphilly, South Wales. Accommodation for 50 new beds will be available when they are completed.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Four post-graduate courses are due to begin on Sept. 17th, each of them lasting for two weeks. Medicine, surgery, and the specialties will be dealt with at the Westminster Hospital, the whole of each day being occupied with lectures, demonstrations, and operations. The course in orthopædics to be held at the Royal National Orthopædic Hospital will also occupy the whole of each day, and that on diseases of children at the Queen's Hospital for Children, Bethnal Green. The course on diseases of the eye at the Royal Eye Hospital, St. George's-circus, London, S.E. 1, will be held each afternoon at 3 P.M.

A CANADIAN MEDICAL TOUR.—The members of the Canadian Tuberculosis Association, who are on a tour of European institutions, visited King Edward VII. Sanatorium on Sept. 7th, and were entertained to lunch, followed by a lantern demonstration by Sir StClair Thomson, who related his 17 years' experience as laryngologist to the institution. Dr. F. H. Pratten (London, Ontario), in proposing a vote of thanks, mentioned that the lead given by Midhurst had been followed practically throughout Canada, and that every sanatorium in Canada now had a laryngologist on the staff, the larynx in every case being systematically examined.

PIGMENTATION OF SKIN AND TUBERCULOSIS.—On Sept. 5th, at the Annual Congress of the National Veterinary Medical Association held at Newcastle-on-Tyne, the relative immunity from tuberculosis of the dark-skinned Jewish races compared with the blondes of Northern Europe was discussed. Mr. W. C. Miller, of Edinburgh, said that there was authority for the statement that certain races of cattle possessed of a light-coloured coat and hide contracted tuberculosis more easily than those with dark coats when they were put together in infected places. This contention was in accord with the statement of other authorities who had been compiling statistics of tuberculosis in the human race. The blonde individual with auburn, silky hair, and pale, freckled skin of fine texture, showed a greater degree of susceptibility to infection with tuberculosis than those of the Jewish race.

BRADFORD MENTAL HOSPITAL.—A new mental hospital is to be erected at Bradford at a cost of £132,000, to house 400 patients.

GLASGOW REFRACTION HOSPITAL.—A refraction hospital, under the control of a committee of qualified opticians, is about to be opened in Glasgow. The principal object of the institution will be the provision of free sight-testing facilities, and the supply of glasses in necessitous cases, while classes will be conducted in connexion with the diplomas of the British Optical Association and the Spectacle Makers' Company. Patients found to be suffering from disease of the eye will be advised where to obtain professional treatment.

Appointments.

ANDERSON, J. S., has been appointed by the City Council of Leeds, as Medical Superintendent of Seacroft Hospitals.

BEBBINGTON, Evelyn F., M.B., Ch.B. Liverp., D.P.H., Assistant Medical Officer for Maternity and Infant Welfare at Northampton.

HANCOCK, A. C., M.B. Lond., M.R.C.S. Eng., L.R.C.P. Lond., D.P.H., Medical Superintendent at Kent County Mental Hospital, Barming Heath, Maidstone.

HENDERSON, A., M.B., Ch.B. St. And., Assistant Medical Officer of Health for the county of Aberdeenshire.

Sheffield Royal Hospital: ALLOTT, E. N., M.B., Ch.B., B.Sc., full-time Assistant Physiologist; CALLCUTT, J. SHIRLEY, M.B., Ch.B., Resident Surgical Officer; BEATTIE, WM., M.B., Ch.B., Senior Casualty Officer; MAXWELL, C. G., M.B., B.Ch., B.A.O., First Assistant Casualty Officer; PATTERSON, W. J., M.B., B.Ch., B.A.O., Second Assistant Casualty Officer; RAINSFORD, C., M.B., B.Ch., B.A.O., First House Physician; FLINT, A. O., M.B., Ch.B., Second House Physician; HYNES, W., M.B., Ch.B., M.R.C.S., L.R.C.P., First House Surgeon; LYNN, ALAN, M.B., B.Ch., B.A.O., Second House Surgeon; ALCOCK, WM., M.B., Ch.B., Ophthalmic House Surgeon; and MARWOOD, V., M.B., Ch.B., Aural House Surgeon.

Vacancies.

For further information refer to the advertisement columns.

All Saint's Hospital (For Genito-Urinary Diseases), 49–55, Vauxhall Bridge-road, S.W.—H.S. At rate of £150.

Bath, Somerset and Wilts Central Children's Orthopædic Hospital, Combe Park.—Asst. Res. M.O. At rate of £120.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110.

Birmingham City.—Asst. M.O. £750.

Birmingham General Hospital.—Asst. S. £50.

Birmingham, Highbury Hospital.—Jun. M.O. £300.

Birmingham, Queen's Hospital Medical School.—Res. Anæsthetist. £70–£100.

Brighton, New Sussex Hospital, Windlesham-road.—H.S. £50.

Bristol, Southmead Hospital.—2nd Asst. M.O. £200.

Bury St. Edmunds, West Suffolk General Hospital.—Res. H.S. £180.

Cairo, Egyptian University Faculty of Medicine, Dental School.—Lecturer in Dental Prosthesis, &c. £E480.

Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow.—Assist. M.O. £250.

Connaught Hospital, Orford-road, Walthamstow, E.—Sen. Res. H.S. At rate of £150. Also Jun. Res. H.S. and Res. H.P. Each at rate of £100.

Croydon, Mayday-road Hospital.—Res. Asst. M.O. £300.

Cyprus.—District M.O. £600.

Denbigh (near), North Wales Sanatorium.—Male Asst. Res. M.O. At rate of £200.

Derby, Derbyshire County Council.—Tuberculosis Officer. £750.

Evelina Hospital for Children, Southwark, S.E.—H.P. At rate of £120. Also Hon. Asst. Aural Surg.

Gloucestershire County Council.—M.O. for Maternity and Child Welfare. £750.

Gloucester, Gloucestershire Royal Infirmary, &c.—H.P. At rate of £150.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. Also H.P. Each at rate of £100. Also Part-Time Jun. Cas. O. At rate of £150.

Jersey General Hospital and Poor-law Infirmary.—Res. M.O. £200.

Leamington Spa, Warneford, Leamington and S. Warwickshire General Hospital.—Hon. Asst. S.

Leeds, St. James' Hospital.—H.P. and S. £200.

Liverpool, Liverpool Eye and Ear Infirmary.—Hon. Asst. Surgeon to Ear, Nose and Throat Department.

Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. to Med. Supt. £250.

London Lock Hosp., 91, Dean-st., W.—H.S. At rate of £200.

London Temperance Hospital, Hampstead-road, N.W.—Res M.O. At rate of £175. Cas. O. At rate of £120. Also H.P. At rate of £100.

Macclesfield, Parkside Mental Hospital.—Res. Clin. Asst. £75.

Manchester, Maternity and Child Welfare Centres.—M.O. £600.

Manchester, Monsall Hospital.—1st Asst. M.O. £600.

Manchester, Royal Infirmary.—Res. M.O. £200. Also Asst. M.O. and Asst. S.O. Each £35. Also Asst. Surg. O. for Central Branch £75.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Sen. Res. M.O. Also Asst. Cas. O. At rate of £140 and £100 respectively.

Miller General Hospital for South-east London, Greenwich-road, S.E.—Pathologist. £600.

National Hospital, Queen-square, W.C.—Asst. P.

Newcastle-upon-Tyne, University of Durham, College of Medicine. Asst. Bacteriologist. £500–£600.

Nottingham, Bagthorpe Institution and Infirmary.—Res. Asst. M.O. At rate of £300.

Plymouth Homœopathic and General Hospital.—H.S. At rate of £150.

Plymouth, South Devon and East Cornwall Hospital.—Cas. H.S. At rate of £100.

Prince of Wales's General Hospital, Tottenham, N.—H.S., Special H.S., and H.P. Each at rate of £120. Also Jun. H.S. and Jun. H.P. Each at rate of £90.

Queen's Hospital for Children, Hackney-road, E.—H.P. Also Cas. O. Each at rate of £100. Also Physician-in-Charge Skin Department.

Richmond, Surrey, Royal Hospital.—Sen. H.S. At rate of £150.

Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. £150.

Royal Northern Hospital, Holloway, N.—Res. M.O. £200.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. £150.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—Hon. S. to Out-patients.

Smethwick, Cornwall Works Dispensary.—M.O. £600.

South London Hospital for Women, South Side, Clapham Common S.W.—H.P. and 3 H.S.'s. Each at rate of £50.

Sudan Government Medical Department.—M.O. £E720.

Swansea Hospital.—Two H.S.'s. £150.

Swansea General and Eye Hospital.—Two Hon. Asst. S.'s.

Talgarth, near Brecon, South Wales Sanatorium, &c.—Asst. Res. M.O. £200.

West Bromwich and District General Hospital.—Cas. H.S. £200.

Weston-super-Mare Hospital.—Res. M.O. £130.

Willesden General Hospital, Harlesden, N.W.—Res. H.S. At rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Dunstable (Bedfordshire) and Brighouse (York, West Riding).

The Home Secretary gives notice that in consequence of the death of Dr. J. E. Moorhouse, one of the Medical Referees under the Workmen's Compensation Act for the Stirling District of the Sheriffdom of Stirling, Dumbarton and Clackmannan, the appointment held by him is vacant. Applications for the post should be addressed to the Private Secretary, Scottish Office, Whitehall, London, S.W.1, and should reach him not later than Sept. 29th, 1928

Births, Marriages, and Deaths.

BIRTHS.

BRETT.—On August 31st, the wife of Major Pierce Brett, M.B., R.A.M.C., Reserve of Officers, Churchfields, Salisbury, of a son.

CANE.—On Sept. 7th, at Reepham, the wife of Maurice H. Cane, M.R.C.S., of a daughter.

FENTON.—On Sept. 7th, the wife of W. J. C. Fenton, M.R.C.S., Mavors-lane, Barking, of a son.

HERMAN.—On Sept. 6th, at Tonbridge, the wife of A. E. Herman, F.R.C.S., of a daughter.

HAYCRAFT.—On August 30th, at Cathedral-road, Cardiff, the wife of John Berry Haycraft, F.R.C.S. Eng., of a daughter.

MORLEY.—On August 28th, the wife of A. H. Morley, M.B., B.S. Lond., of a daughter.

WISHART.—On July 27th, at Toronto, Canada, the wife of D. E. Staunton Wishart, M.D., of a son.

MARRIAGES.

COCHRANE—ASPLIN.—On Sept. 6th, at the Church of the Holy Cross, Milton. Northants, Thomas S. Cochrane, M.B., to Gwendolen May, daughter of Mr. and Mrs. Asplin, the Manor House, Milton.

DICKSON—SOUTER.—On Sept. 5th, at King's College Chapel, Aberdeen, Alfred Thomson Barclay Dickson, M.B., Ch.B., to Isabel Elsie, eldest daughter of Prof. Alexander Souter, F.B.A., and Mrs. Souter, Humanity Manse, Aberdeen.

DEATHS.

FINDLAY.—On Sept. 5th, suddenly, Andrew Findlay, M.B., C.M., of Nelson, Lancashire, aged 59 years.

HIELD.—On Sept. 6th, at Millfield-lane, Highgate of lymphadenoma, Nancy Hield, M.B., B.S., younger daughter of the late John Heaton Hield and Harriet Hield, aged 29.

MCCALL.—On August 9th, at Fort William, Calcutta, Major Graeme William Denroche McCall, M.C., L.R.C.P., R.A.M.C., aged 38.

NASH.—On Sept. 9th, at Queen Alexandra Military Hospital, Millbank, Colonel Llewellyn Thomas Manly Nash, L.R.C.P., late A.M.S., Richmond, Surrey, aged 67.

PARRY.—On Sept. 3rd, at Dinas Powis, Cardiff, Edward John Parry, M.D., J.P., aged 78.

WILSON.—On Sept. 9th, at Fairwarp, Sussex, Albert Wilson, M.D. Edin.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

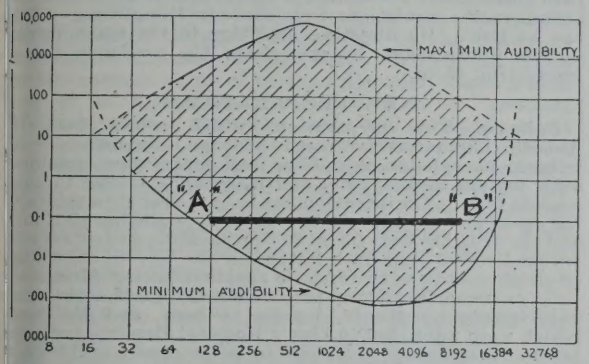
A GRAMOPHONE FOR THE DEAF.

By C. M. R. Balbi, A.M.I.E.E.

People who are not totally deaf but only "hard of hearing" are much isolated from their fellow beings because they are unable to hear general conversation. They suffer from an additional hardship if they also cannot hear instrumental or vocal music, since music can give especial pleasure to men whose life is spent for the most part in a world of silence.

To meet the needs of those who are thus afflicted I have designed a gramophone which will produce a greater intensity

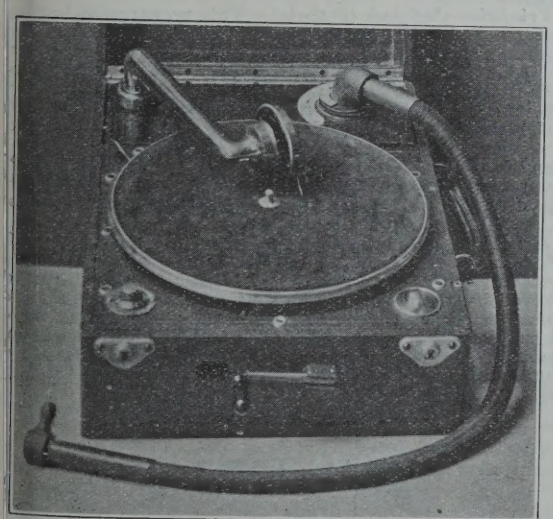
Fig. 1.



Standard of sound intensity of a gramophone as represented by "A.B."

than the ordinary instrument. The standard of sound intensity of an ordinary gramophone heard in a room is that of a piano or other musical instrument about equal. When this is expressed in the units of audiometric measurements * the standard may be said to vary about a mean

Fig. 4.

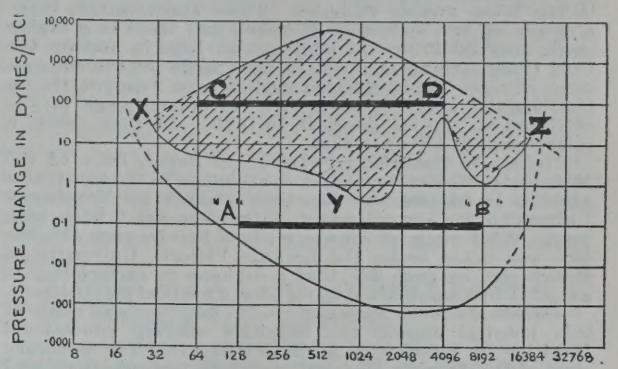


Gramophone for the deaf.

0·1 dynes per sq. cm. (root-mean-square pressure) as presented by AB in the audiogram shown in Fig. 1.

If we take an imaginary audiogram of a deaf person XYZ as shown in Fig. 2, then the level of the intensity AB would not be sufficient to make him hear. The intensity would have to be raised to the level CD—i.e., 100 dynes per sq. cm.—to make him hear, and means must be found to

Fig. 2.



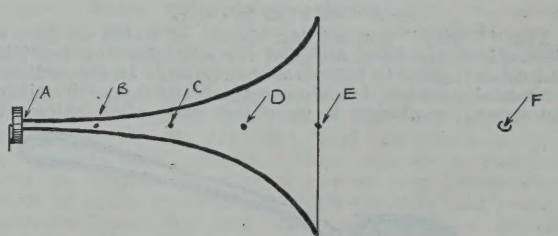
Standard of sound intensity required by a deaf person as represented by "CD."

accomplish this. By examining the average intensity of sound at different points along the acoustic passages of a gramophone, such as are indicated in Fig. 3, it is found that the average intensities are as follows:—

Point	A (sound-box)	.. ..	=1100	dynes per sq. cm.
„	B		=1000	„ „
„	C		= 100	„ „
„	D		= 40	„ „
„	E (end of horn) ..	..	= 10	„ „
„	F (6 ft. from end of horn)		= 0·1	„ „

The intensity at the point B in the horn would thus be more than sufficient to enable the deaf person represented

Fig. 3.



Points in acoustic passages at which measurements were taken

by the audiogram XYZ to hear. It is an easy matter to tap the reproduced sound of the gramophone at this point and to conduct it to the ear of the sufferer by means of a flexible tube similar to that of a conversation tube.

This has been done, and in the special gramophone for the deaf which I have designed (Fig. 4) a further refinement has been added in the form of an adjustable volume control so that the deaf may regulate for themselves the intensity that suits them best. By listening at the special outlet provided the deaf are able to hear any recorded item or piece of music.

I have also designed on these principles a loud speaker which enables the deaf to obtain broadcast reception with the necessary apparatus.

* See The Lancet, 1925, i., 954.

"SOME CAUSES OF RACIAL DECAY."

In his Galton lecture delivered before the Eugenics Society on Feb. 16th last Mr. C. J. Bond inquired into the distribution of natural capacity in the population and the need for a national stocktaking. His interesting thesis was examined in a leading article which appeared in The Lancet of Feb. 25th (page 401). The lecture has now been reprinted by the People's League of Health in the form of an attractive pamphlet which can be obtained from the secretary of the League at 12, Stratford-place, London, W. 1, for 6*d*.

STUDENT'S GUIDE: SESSION 1928–29.

ADDENDA.

African Medical Officers.—In addition to the membership of the West African Medical Staff, which is limited to British subjects of European parentage, there are a number of Government appointments for African medical officers in the West African Colonies. These appointments carry a salary on the scale £500–20–£600, and there is a higher scale, £600–30–£720. In addition, in Nigeria and on the Gold Coast, arrangements have been made for the employment of a few young African medical men temporarily on the hospital staffs, with a view to appointment to the Government service later, if suitable. In such cases a salary of £400 a year is paid.

Diploma in Bacteriology.—Dr. H. S. Raper, Dean of the Manchester Medical School, calls attention to the fact that a diploma in bacteriology has been granted by Manchester University for several years, with some candidates each year. While no mention was made of this on page 420, the fact was noted under the heading Victoria University of Manchester, on page 381, that a diploma in bacteriology is awarded by examination to registered medical practitioners.

Ancoats Hospital, Manchester.—No mention was made of this hospital among the hospitals offering educational facilities to Manchester medical students. The honorary staff of the Ancoats Hospital give both undergraduate and post-graduate clinical instruction and a fair number of students attend the out-patient clinics. The hospital contains 114 beds and deals with 20,000 accidents and urgency cases per annum. There are six resident posts open to men and women. The General Superintendent and Secretary is Mr. Herbert J. Dafforne.

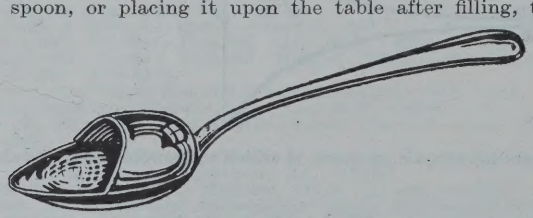
Since our Students' Guide was published a special number of the *Medical Officer* (Sept. 1st.) has appeared, containing full information as to degrees and diplomas in Public Health, along with an address on the Public Health Service as a career, by Dr. J. Howard Jones, President-elect of the Society of Medical Officers of Health.

The September issue of the *Edinburgh Medical Journal* is also a special educational number containing a concise guide (28 pages) to medical education in Scotland.

The *British Dental Journal* for Sept. 1st contains an address on Dentistry in its Relation to the Public Health Service, by Dr. W. M. Frazer and a supplement of 16 pages, giving the dental regulations adopted by the examining bodies and a useful idea of the cost of the dental curriculum in various centres.

A USEFUL SPOON.

THE "Verity" non-spilling spoon, of which we give an illustration, has been designed for administering medicine and other liquids to infants and invalids. In the ordinary horizontal position it holds one teaspoonful, and by tilting the spoon, or placing it upon the table after filling, the



The "Verity" non-spilling spoon.

liquid runs into an enclosed part, from which it cannot be easily spilled. The inventor rightly believes that when an ordinary spoon is used for giving medicine to children a part of the dose is generally lost in transit, and sometimes too large a dose may be given because an inaccurate attempt has been made to compensate for this loss. Use of the "Verity" spoon should make for precision and should, incidentally, prevent sticky fluid from being spilt over clothing. It is obtainable at the price of 3*s.* post free from the sole distributors, Discon, Ltd., (Dept. S), 12, Henrietta-street, London, W.C. 2.

INDUSTRIAL METHYLATED SPIRIT AS A BEVERAGE.

IN the current number of the *Analyst* Mr. D. Henville, the Stepney public analyst, recalls the complaint of a number of persons charged with drunkenness at the Old-street Police Court last year that their symptoms were produced by the nature rather than the amount of the liquor imbibed. Neither methyl nor isopropyl alcohol, however, was found in the class of wine complained of and the abnormal symptoms remained unexplained. Early this year, however, it was noted that industrial methylated spirit was being sold in the district as a beverage, and the discovery confirms the repeatedly observed ill-effects of methyl alcohol whenever it is taken into the human system. Some time ago attention was called [1] to some work done i the United States, in which it was sought to show tha methyl alcohol was a relatively harmless substance. M Henville describes a technique for the detection of isc propyl alcohol, based on its oxidation to acetone and th identification of the latter by means of the nitro-prussid reaction, by which as little as 0·1 per cent. can be detecte in a liquid containing 10 per cent. of ethyl alcohol.

A PAMPHLET ON DISEASE IN CHINA.

ANY medical man on his way to take up work in Chin especially if for the first time, would do well (if he can rea German) to study on the voyage a pamphlet on "The Ep demiology and Tropical Diseases of China" (pp. 69, wit 13 of bibliography added, price about 5*s.*) by Dr. E. G Nauck, being the latest supplement to the *Archiv für Schiffs und Tropen-Hygiene.* Dr. Nauck, formerly of the Hamburg Institute and recently on the staff of the Union Medica College, Pekin, discusses the history, pathology, industria origin, and treatment of most of the important diseases o China. Like most German authorities, he generousl honours the memory of Manson, who showed how th problems of tropical medicine were to be solved. He note that much of our knowledge is due to missionaries and tha antimosquito regulations were made in Hong-Kong so lon ago as 1900. By directing attention to the many lacuna in our information, he stimulates the reader to aim a completing them.

NEW PREPARATIONS.

Calsoma.—This preparation, which comes from th Abbott Laboratories, North Chicago, consists of th tribasic phosphates of calcium and magnesium, combine with sodium biphosphate, and magnesium citrate in effer vescent form. The intention has been to provide a neutralis ing agent for excessive acidity without producing alkalinity and the drug has been found to be a valuable gastric antacid In our issue of June 16th last, when our present knowledge of alkaline salts as therapeutic agents in gastric disease wa briefly summarised, it was pointed out that careful laborator experiments by Messrs. Freezer, Gibson, and Matthews which were published in Guy's Hospital Reports, indicate tribasic magnesium phosphate to be the most suitable agen for the rapid counter-action of gastric acidity. At the sam time, experimenters made the suggestion that tribasic calciur phosphate, citrates, and calcium carbonate are almost equall effective. The manufacturers of calsoma, it would appea have produced a preparation very closely following thes suggestions. The effervescent powder is granular, is pu up in two-ounce bottles, and for a single dose two teaspoonful are added to a glass of cold water and is taken after meal at the period which personal experience shows to synchronis with the onset of heartburn. For children under 10 years o age one teaspoonful is indicated. There is clinical evidenc that in gastric ulcer the drug may be safely used over lon periods.

Trinitrine Caféinée (Dubois).—This preparation has bee sent to us by the Anglo-French Drug Co., 238A, Gray' Inn-road, London, W.C. In its new pharmaceutical form the drug is supplied in sugar-coated, soft-centred pills fron which, when placed in the mouth and chewed the nitro glycerine is immediately liberated and absorbed, promp action resulting. Each pill contains in addition to 3 cg of trinitrin (1 per cent. sol) 2 cg. of pure caffein, which i found to prolong the action of the trinitrin, while intended t counteract the weakness following on anginal attacks The directions warn the consumer that the maximum dos in the 24 hours should be ten pills.

Hepatex is a concentrated extract of liver produced in th laboratories of Messrs. Evans Sons, Lescher and Webb, a Froston Lodge, Runcorn, in accordance with a metho evolved by their own research workers. The liquid is s concentrated that 1 oz. contains the active principles o 16 oz. of fresh liver, and it can be taken undiluted in tea spoonful doses or in soup and similar vehicles. Hepatex i supplied in four-ounce bottles, which is sufficient for eigh days' full treatment.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Sept. 18th.—3.15 P.M., Dr. R. Wade: Anæsthesia

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL Gray's Inn-road, W.C.1:
MONDAY, Sept. 17th.—1.30 P.M.: Examination of the Ear.
WEDNESDAY, Sept. 19th.—1.30 P.M.: Examination of th Nose.

[1] THE LANCET, 1928, i., 1236.

Lettsomian Lectures

ON

RHEUMATIC HEART DISEASE IN CHILDHOOD.

Delivered before the Medical Society of London

BY F. JOHN POYNTON, M.D., F.R.C.P. LOND.,
PHYSICIAN TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET; PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL.

LECTURE II.*

Delivered on Feb. 28th, 1928.

IN this lecture I shall discuss the advantage that I believe would result from basing the study of heart disease as far as possible upon its development in the young, and building upon this foundation the further manifestations of heart disease in the adult. This should be of particular value in the study of the infective diseases of the heart. We should teach first the earliest signs of cardiac disorder, those which occur at an age when the heart is at its greatest perfection, rather than the later and complex signs which distinguish a heart scarred by past disease or degenerated by alcohol or damage to the coronary vessels. We should dwell upon the efforts made by the young heart to recover from an acute infection, and upon our knowledge of the factors that tend to prevent further infection and damage rather than upon minute differences in the action of cardiac tonics and their effects on a worn-out heart. We should indicate first of all how to prolong the life of the heart by prevention and anticipation, and thus create around the subject an atmosphere of hope rather than one of that melancholy which must surround our feeble efforts at combating chronic morbus cordis.

The physician with wide experience of the symptoms of heart disease in the young can best appreciate those peculiar to the adult. In the rheumatic form of childhood all or any parts of the heart may be attacked, and its study demands accurate clinical observation, great patience, and watchful care in treatment, with a mind quick to appreciate and apply advances in knowledge, both therapeutic and strictly scientific.

It may be of service to put forward some features that have attracted my attention, for comparison with the experience of others, and to mention some of the landmarks which have seemed to me of value.

AGE OF ONSET.

The early age at which rheumatic heart disease may appear is remarkable and of vital importance. There are a few records of women suffering from acute rheumatism in pregnancy and of the detection of a murmur in the fœtus in utero. When I was pathologist at St. Mary's Hospital I made a post-mortem examination upon a two-days-old infant whose mother had suffered from rheumatic fever in pregnancy. The child was very cyanosed and the post-mortem examination showed large vegetations upon the mitral valve, spreading to the aortic and containing masses of streptococci. This case was the one which urged me to investigate the cause of acute rheumatism, and it is somewhat ironical that Fine and I spent our first two years in searching for Achalme's bacillus and discarding streptococci! I have seen chorea with acute cardiac dilatation at 10 months, and a child with chorea and mitral disease at 2½ years, followed by rheumatic relapses and definite mitral stenosis by the fourth year. These early cases are most instructive, on account of their clinical course and histories and because it is at this early age that we are likely to meet with considerable difficulties in diagnosis.

The highest incidence of rheumatic heart disease is, I believe, around the tenth year, and my statistics, based on over 1000 first attacks and compiled over 30 years, support this statement. My impression is that acute rheumatism is more frequent before the fifth year than is generally recognised, for in 1908 I had no great difficulty in collecting 52 cases, all under personal observation. Forty-three of them had organic heart disease, eight were fatal, and five were complete invalids. A review of the last 100 cases of acute rheumatism admitted to my ward at the Hospital for Sick Children, Great Ormond-street, showed that 13 had the first attack of rheumatism between two and five years. One died at 4 years and 11 months of carditis; six had organic valvular disease; four had repeated attacks of chorea and valvular disease; one had chorea; and one arthritis.

The following are five examples of early rheumatic heart disease.

1. A female, aged $4^{10}/_{12}$, 14 days before admission to hospital had a sore-throat followed by multiple arthritis, and then by carditis, which proved fatal.

2. A male, aged 4 years, living in a damp house, was brought to the hospital for chorea. He was found to have mitral endocarditis with an enlarged heart.

3. A female, aged 2¾, had for seven days suffered from a "cold." This was followed by chorea, mitral endocarditis, and cardiac dilatation. There were recurrences of rheumatism, and at 4 years she had obvious mitral stenosis.

4. A female, aged 4½, living in a damp house, had been ailing for six months. There were wasting, anæmia, nocturnal pains in the joints, and later, arthritis. On examination there was great cardiac dilatation with mitral endocarditis. The cardiac lesion had been unsuspected.

5. A female, aged 14½, three months before admission had become pale and progressively more feeble without any definite symptoms, then followed a slight chorea, then carditis with venous thrombosis, pericarditis, broncho-pneumonia, and death.

MODES OF ONSET OF RHEUMATIC HEART DISEASE.

This question is one which must necessarily be closely associated with the problem of deciding what is to be considered reliable evidence of heart disease. There will always, I imagine, be cases that elude us, and in the absence of arthritis and chorea we must expect parents sometimes to fail in recognising that their children are ill. A great number of cases of rheumatic heart disease in childhood fall into one of two groups, the first beginning with a sore-throat, arthritis, and muscular pains, the second with chorea. Then comes a smaller group in which there is a severe and dangerous attack of acute rheumatism with carditis and many manifestations. We are then left with a group which may be called primary cardiac rheumatism. This is not a clear-cut division, for though rheumatism may undoubtedly attack the heart predominantly and without any other noticeable collateral sign of infection, closer investigation often reveals a sore-throat, some suspicious pains, or even a passing arthritis so evanescent as to be neglected. Or the child may have had a considerable period of poor health, losing weight and strength, and becoming anæmic and short of breath, nervous and irritable; it may be feverish or troubled by night terrors or attacks of acetonæmia. Within this group is a small subgroup of cases in which the onset commences with a startling disturbance of rhythm—e.g., a heart-block or auricular flutter.

First Signs of Heart Disease.

In the rheumatic child acute dilatation is the earliest evidence, and I am a strong supporter of the great value of percussion. When the late Dr. D. B. Lees was studying dilatation of the heart I traced out many cardiac outlines in normal and cardiac children, and in fatal cases tested their accuracy by needles driven into the chest at intervals along the line of tracing. I am convinced that in childhood the deep cardiac dullness can be accurately ascertained, but I do not say—and this I emphasise—that this holds good in the adult. The peculiarly light form of percussion needed requires careful

* Lecture I. appeared in THE LANCET of Sept. 15th.

practice, and I have repeatedly been able to convince students how accurate percussion can be once they have realised the method. It is difficult to imagine a more essential undertaking in the whole field of clinical cardiology. An early rheumatic dilatation in childhood may precede endocarditis and pericarditis, and may occur irrespective of either. The complete picture is well known: the quickened pulse, the feeble impulse, the outline enlarged to the right, the left, and sometimes upwards, the short first sound with sometimes a soft systolic bruit internal to the apex, and an accentuated pulmonary second sound. If we do not accept the value of dilatation we are driven for our first evidence to the signs of endocarditis or pericarditis, and thus overlook one of the cardinal principles in heart disease; that first thoughts should be directed to the myocardium. This view of the value of percussion is disputed, and I agree with Dr. John Parkinson that the most satisfactory proof of an early heart involvement is the demonstration by electrocardiogram of such an event as heart-block. I hold, however, that the most useful information is most often gained from demonstration of dilatation by percussion.

The usual type of dilatation is acute, but on very rare occasions it may be fulminating. Those who have seen this clinical landmark of heart disease—an acute asystole as the result of a fatal primary rheumatic dilatation—can never forget the ashen pallor, the vomiting and horrible restlessness, the running pulse and embryonic heart sounds, the rapidly enlarging liver, and the pulmonary œdema without any general dropsy, save a little puffiness round the ankles and possibly of the face.

Another more frequent type of dilatation, with an nteresting bearing upon adult heart affections, is the subacute and chronic type usually associated in childhood, as in adult life, with much nervous disturbance. The dilatation does not subside and the heart remains large and feeble for a long time. As a rule a triad of symptoms develops, due respectively to the heart, the nervous system, and the digestive system. As a result the children are breathless on exertion, and may have fainting attacks and cardiac pain. They have a rapid and sometimes irregular pulse, the rate of which is influenced so greatly by emotion that we are often doubtful how to divorce the nervous from the cardiac element. The heart beat may be forcible but is ineffective. They suffer from flatulence and dyspepsia, which further complicate the condition. They improve with rest and care but rapidly become fatigued by over-exertion, and quickly relapse if it is continued. In some of these cases one suspects either an element of hyperthyroidism or else that the child has had from birth a constitutional weakness of the myocardium, which may be soft, fat, and flabby. An important point is the absence of valvular damage, so that if the dilatation is overlooked the child's condition may be considered entirely due to "nerves," and if he is old enough to go to a boarding-school he is likely to receive scant sympathy from the "muscular Christian" order of schoolmaster.

After puberty the nervous symptoms come much to the fore, particularly with females. Cardiac pains intensify, and the result is a condition of debility, lack of confidence, and general uselessness, as exhausting for the friends as for the patient.

My view, founded on observation, that acute rheumatism may produce in childhood the condition of "irritable heart," is strengthened by my experience of "D.A.H." among soldiers, and receives interesting and valuable support from an unpublished investigation carried out by my friend, Dr. John Parkinson, when on active service. He analysed with much care the histories of 3000 soldiers suffering from medical illnesses. In the first 1000 he found 172 men who had suffered from a definite attack of acute rheumatism without valvular disease earlier in life, and in this 1000 20 per cent. of the total of 630 cases of D.A.H. were found in the rheumatic group. In the second 1000 170 gave the same history of previous acute rheumatism, and 20·5 per cent. of the 610 cases of D.A.H. fell in this group. In the third 10 148 gave a similar history, and 17·4 per cent. the 664 cases of D.A.H. were in the rheumatic grou Thus an investigation concerned only with adu reached the same conclusion, that acute rheumatis without endocarditis is one of the most importa agencies in the history of the "irritable" heart.

Disturbances of Rhythm.

The disturbances are probably the result of foc lesions in the connective tissue framework of t heart in the region of the bundle of His. T technical skill and necessary equipment for th study cannot be expected of physicians in gener and the exact significance of the electrocardiograp tracings is, in some cases, difficult to assess. considerable bibliography has sprung up, and amo the various papers those of J. Parkinson, Ho Gosse, and E. B. Gunson, in 1920, and A. E. Col and Homer Swift in 1924, are particularly helpf

Sinus Arrhythmia.—The English writers rema that the presence of sinus arrhythmia does not signi that the heart has escaped infection, and with th my clinical experience is entirely in accord. Th give a tracing that shows the combination of hea block with sinus arrhythmia, and heart-block in acu rheumatism is evidence of myocardial damage.

Heart-block may vary from a mere prolongati of the P.R. interval to a complete block. H. Butterfield, in the volume of Heart for 1911–1 published a case which has always appealed to m This was a girl, aged 16, who showed a partial hea block for the last 11 days of her life while sufferi from acute rheumatic carditis. After death a minu diplo-streptococcus was isolated from the pericardi exudation and inflamed valves. Aschoff's nodul were demonstrated in the myocardium, and a wide diffused inflammatory exudate, most intense in t region of the auriculo-ventricular node, was d covered. Naish and Kennedy [1] published a case a boy of 16 suffering from carditis; similar chang were found in the auriculo-ventricular node. Th also directed attention to the sudden onset arrhythmia in a boy of 8. There could be no mo striking example of complete heart-block, usherin in a very severe first attack of acute rheumat carditis, than the case I published in the Archiv of Disease in Childhood for February, 1927.

A boy of 13 developed a sore-throat and, four days lat pain in the chest, fainting attacks, and vomiting. When saw him there was obvious heart-block, the ventricl beating at 36, the auricles at 72, per minute. After abo a week the block vanished, to be followed by arthritis, mc severe chorea, and endocarditis of the aortic and mitr valves.

Several features in this case confirmed the observ tions of others—e.g., the transient block, in spite the very severe carditis which followed; fever whi was doubtless, in part, due to the sore-throat, and t early syncopal attacks which occurred before I sa the boy but which may reasonably be interpret as of the Stokes-Adams type. Such cases are ra A simple transient bradycardia may also occur rheumatic carditis.

Auricular flutter may occur in childhood qui apart from rheumatism, and may even be congenita In infancy the symptoms are remarkable—screamin cyanosis, vomiting, drawing up of the legs, breat lessness and rigidity, cardiac dilatation, and som times acute failure. I have followed a case f years, but I have never met with such severe sympton in acute carditis. Flutter must, I suppose, poi to myocardial damage, though this may be qui transient and the flutter be a matter of second When four months old this patient was near moribund from heart failure and had numberle attacks afterwards, yet now, at the age of 5, is we grown and much less liable to attacks.

Paroxysmal tachycardia may follow an attack carditis.

[1] THE LANCET, 1914, ii., 1242.

Premature contractions are more commonly auricular ıan ventricular. Parkinson, Hope Gosse, and unson, pointing out the association of auricular ɔremature contractions with flutter and heart-block, cline to the view that they are evidence of definite yocardial damage. Ventricular premature conactions are not so suggestive. There may be very ɔnsiderable difficulty in distinguishing between ɔremature auricular contractions and auricular ɔrillation without electrocardiographic tracings.

Auricular fibrillation is a recognised feature in ıronic rheumatic heart disease, and I saw a remarkɔle example in a boy of 12 who had an apparently ell-compensated mitral stenosis. One day, in a ɔt sun, he bicycled many miles up and down hills ıd came home utterly exhausted and developed vere fibrillation. Sutherland has reported a case here it occurred in the acute stage of an early ırditis, but I believe this to be very rare.

My conception of rheumatic disease of the myoɔrdium is that in the acute carditis of childhood ıe general myocardial poisoning is the outstanding sion in the production of clinical symptoms, and ıat, in comparison, the interstitial focal lesions are mparatively insignificant.

Valvular Disease.

The bead-like vegetations of early endocarditis, oducing slight incompetence, could not in themselves use any degree of dilatation, and the presence of tual valve deformity can only be ascertained by e constancy of a systolic murmur, which usually sappears with the dilatation. Later, if the mitral docarditis is at all severe, the signs of hyperɔphy will decide the point. There was at one me an idea that a systolic mitral murmur in rheumatic child was of little importance. This true enough from the mechanical aspect, both adults and in the young, when the heart is abilised, and the view was, I think, the result of a action against the vexatious and useless prohibition exercise and ordinary activity. Nevertheless, the rheumatic child, this murmur is an evidence cardiac rheumatism and to this extent important, ıd we must certainly guard against any idea that itral incompetence in childhood may not be most rious. In fact, such cases, when there has also en myocarditis, may run a disastrous course and ver properly compensate. It may be the murmur at attracts our attention, but it is the condition the myocardium that governs the situation. A ell-known occurrence is the increase of intensity a mitral systolic murmur when a child is once more newing activity, and this may be brought forward evidence of a mistake in treatment. On the ntrary, however, provided the child is well and e impulse firm and stable, it is a good sign. After me years this murmur, even though loud and heard early toward the axilla, may gradually become nter and finally inaudible. Such children, on ing sent to a school at 14 with a warning to the ctor as to the previous history, have sometimes en so sound that I have been informed by the rents that it was thought I must have been misken in my diagnosis. At seven years I am sure ere would have been no room for doubt.

Mitral Stenosis.—The association of mitral stenosis th recurrent chorea is well established and suggests persistent activity of the infection as the cause of e stenosis. A valuable point is the frequency with ich the process of contraction of the valve arrests. e require a large mass of evidence from supervision convalescents over long periods. This is one instance the great difficulties that surround such an inquiry.

Three years ago a girl of 10 was under my care in hospital h recurrent chorea and the first signs of a mitral stenosis. e was a long time in hospital and was treated with every e. Afterwards she went to a special convalescent spital for eight months, and later to several other country t-homes. On account of her recurrent rheumatism the nsils had been carefully enucleated before her first mission to hospital. With no history of any serious ness throughout these three years, she returned to me for shortness of breath, and I then found an advanced mitral stenosis.

Could any result be more disappointing? Yet I am not convinced that we had learnt all we might about the case, for at present the organisation for special convalescent hospitals is hardly perfect. These should be centres for clinical research as well as for supervision.

Tachycardia is sometimes transient and sometimes more or less continuous. I have noticed this symptom appear at the very onset of the cardiac disease, even before any mitral stenosis could have developed. The most conclusive of all my cases was the following.

A girl, aged 9, living in a damp house, which was liable to flooding, had been ill for four months. She had become very nervous, suffered from severe headaches, and finally developed chorea, for which I saw her in March, 1902. There was dilatation of the heart and a pulse varying between 120 and 150 per minute; the thyroid seemed a little enlarged. She was in hospital six months and never had signs of pericarditis or endocarditis, in spite of the persistent tachycardia. Many of her teeth were carious and were removed, after which the tachycardia quieted down. The explanation that it was the result of a chronic sepsis from dental suppuration was generally accepted. She remained in hospital four months after the dental extractions, leaving in June. In July she returned with severe tachycardia and great nervousness, but there was no pericarditis or obvious endocarditis, renal disease, or tuberculosis. In June, 1903, the house was flooded and she developed rheumatic pains and tachycardia. In August chorea developed again, but there was no cardiac murmur. In 1904 she had another attack of chorea, and now there were signs of mitral stenosis with tachycardia. In 1905 a further attack of chorea occurred, with tachycardia, and there was further evidence of mitral stenosis. I saw her for the last time in June, 1910; she was then aged 17, and in domestic service, with an enlarged heart and every sign of mitral stenosis. Upon any excitement the pulse-rate rose to 150 per minute.

Cases such as these lead me to dwell repeatedly upon the nervous element in the cardiac disease of rheumatic children, and they teach a lesson which I think is of value in the study of heart disease in adult life.

Lastly, even in childhood, malignant endocarditis may supervene upon a mitral stenosis, although I believe this to be rare.

The rare cases of congenital mitral stenosis show changes in the valve that point to a reaction to infection rather than malformation, and I believe that most of the mysterious cases of mitral stenosis are the results of a primary cardiac rheumatism. How insidious and unexpected such cases may be is exemplified by a boy, aged 5, who came under my observation for a mysterious nephritis with blood and casts in the urine. This condition lasted many weeks with only the slightest rise in temperature; during that time warning signs of mitral stenosis developed, but there was no other rheumatic manifestation. The renal condition eventually recovered, but two months later definite chorea appeared and the valvular lesion slowly progressed. It is in the acute rheumatism of very young children that I have been particularly impressed with the insidious development of this lesion, and it is from experience of such cases that I have arrived at the conclusion that a mitral stenosis with no history of acute rheumatism is nevertheless in reality probably rheumatic. I need hardly remark how much we are baffled in the study of juvenile rheumatism and its heart disease by the term "acute rheumatism." I wish we could either call it "rheumatism" in accord with the term "tuberculosis," or, breaking down tradition, find some new and comprehensive name.

Aortic Disease.

Pure aortic regurgitation is in my experience exceptional. Doubtless it occurs, but the overwhelming majority of cases are examples of the combination of mitral and aortic damage, and there are many rheumatic children with this serious condition. The mitral lesion is usually primary, and the aortic follows later in the same illness or in another attack. There may be no premonitory symptoms, though

a slight rise of temperature may rouse suspicion. The weakening of the second sound in the aortic area, with the development of a soft systolic murmur and then of a soft diastolic murmur to the left of the sternum are well recognised, but cannot be over-emphasised, for this lesion is more often overlooked than any. These cases develop along two lines; either the mitral or the aortic lesion becomes predominant, and before childhood is past we may recognise clearly that the patient is doomed to suffer from aortic disease. In severe cases of carditis, extreme damage may occur in a few weeks, and within a fortnight the pulse may have already acquired the Corrigan features. The pulse may even disappear when the arm is raised, and sudden death can occur before the age of 12. On the other hand, I believe that some aortic lesions are so slight as to be recoverable. I am led to this from clinical observation, and from examples in the post-mortem room of slight thickening of the cusps where no aortic lesion had been detected. No children are more nervous than the rheumatic ones with aortic lesions of any severity, and, even though the heart has apparently compensated, this nervousness and inability to stand school-strain is a striking feature.

Malignant Endocarditis.

In my first lecture I dwelt upon the tendency for cases of aortic and mitral disease to develop malignant endocarditis in later life; this may also occur in childhood after what appears to be a severe recurrent attack of acute rheumatism.

A boy, aged 16, suffered from acute rheumatism with carditis at the age of 6, and after that had three more definite attacks. His mother had suffered from rheumatic fever. Three weeks before admission to hospital he had pains in the ankles and knees and round the heart, and his mother thought that it was another attack of rheumatism. He was anæmic and wasted, and there was irregular pyrexia, with signs of aortic and mitral disease and infarctions in the spleen and kidneys. After death none of the vegetations seen on the valves exceeded the size of a pea, but the sections showed masses of streptococci.

This was the type of case which interested Litten in 1899 and led him to believe that rheumatism was becoming more septic in type.

I think we are most likely to throw further light upon this form of endocarditis by studying its development in children and adolescents who are known to have rheumatic heart disease. I hope that in the future many valuable records of rheumatic cases of morbus cordis, supervised over years, will be published, and that an increasing volume of evidence upon the onset of the malignant type will be forthcoming. Shall we find then that the circumstances of the onset were indistinguishable from those of a rheumatic attack, or will there almost invariably be clear evidence of some new type of infective illness grafted on the rheumatism, or proof that the new infection occurs in cases in which we have never felt satisfied that the rheumatism has ceased to be active? Experience shows that in many adult cases we have no guide at all to the causation of malignant endocarditis, but continuous records of the histories of rheumatic heart affections may eventually enable us to decide upon the cause or causes for the break in the history which produces this condition. It is necessary in such an inquiry to dismiss entirely from our minds any classification of malignant endocarditis based on its duration, and to be prepared to find fulminating, subacute, and chronic cases all developing in the rheumatic heart.

Here again you will recognise that the study of heart disease in the young makes a sound basis for the study of heart disease in general.

A certain degree of aortic stenosis is not infrequent in combined aortic and mitral disease, and if it develops later in childhood and adolescence it may relieve the heart of some of its difficulties, but a predominant aortic stenosis appears to me to be very rare, though I have for some years been watching a boy who suffers from an extreme degree of stenosis.

Pericarditis.—The consideration of pericarditis a an entity apart from endo- and myocarditis greatl hampers the education of the student. It is easy t grasp the idea of an inflamed serous membran pouring out fluid, which gradually subsides, leavin the pericardium adherent, but this does not represen rheumatic pericarditis. In childhood there is rarel much fluid poured out, and the wide area of cardia dullness is mainly the result of dilatation due t myocardial weakness. There may be no fluid but much thickening of the pericardium, and th main danger of pericarditis is the concurrent myo cardial weakness. In fact, it is impossible to conside rheumatic pericarditis apart from the other factor in a carditis. Virulent carditis with pericarditis ma be afebrile. Acute dilatation and an excited an rapid action of the heart may precede the appearanc of pericardial friction by several days, and eve by a week or more. There may be no distress, an in some cases the discovery of the lesion comes a a complete surprise. There are cases in which i does far less damage than a severe myocarditis, s that its occurrence, though always serious, is no necessarily alarming.

Recovery, in the sense that the child may be abl to leave hospital, can occur under five years even whe there are very severe general carditis, chorea, profoun anæmia, numerous nodules, and severe polyarthritis Extensive pleurisy and mediastinitis are very grav complications, leading as they do to the worst typ of adherent pericardium. The occurrence of peri carditis without endocarditis suggests some infectio other than rheumatic, but I believe it may result fro rheumatism.

Lastly, in some cases we may see the wave-lik character of the rheumatic infection: an outburst then a remission, then another outburst and remission in some cases prolonged over months.

Venous thrombosis is an interesting complicatio in the severe carditis of childhood; I have seen eigh examples. Seven of these implicated the large vein of the head and neck, two including the superio vena cava. At one time I thought these thrombose might have been mechanical, for they had all bee associated with severe carditis, and it seemed reason able to suppose that pericardial adhesions migh have been a factor. In the eighth case the occur rence of thrombosis at the lower end of the inferio vena cava in a boy suffering from severe chore and an endocarditis from which he made a goo recovery, negatived the mechanical explanation A. F. Voelcker's case of chorea and thrombosis with out any cardiac lesion is still more conclusive. Th condition is probably an acute phlebitis of rheumati origin. As a rule the first noticeable sign is a œdema of one arm and then, if it is extensive, o the chest and face; there may be pain, tenderness, an resistance along the veins. In one of the fatal case the superior vena cava and all the tributaries wer occluded, and there was a pulmonary embolism due to soft clot being detached from the lower en of the thrombus in the superior vena cava. I hav never seen venous thrombosis in any other form o heart disease in childhood, but there can be no doub of its occurrence and reality in rheumatic carditis.

Gangrene of the extremities I have met with in th severe mitral stenosis of young children. Gangren may also occur in the malignant endocarditis o rheumatic children from arterial occlusion; in on such case, complicated by a femoral aneurysm, th entire limb became gangrenous before death.

Except for a slight degree of *aortitis,* seen afte death in a few cases, I have not met with a sever inflammation of the arteries in acute rheumatism (or, if it occurred, I have failed to recognise it), an I have never seen extensive implication of the arterie in any post-mortem examination on a rheumati child. Vaso-motor spasm is sometimes a sequel of acute rheumatism and causes cyanosis of a limb or a Raynaud-like affection of the fingers and hands

The striking *anæmia* produced by virulen rheumatism is thoroughly recognised, and difficultie

may arise in differentiating some cases of aplastic anæmia and acute leukæmia from acute rheumatism. In all three there may be sore-throats and obscure pains in the limbs. The cardiac signs also may be most puzzling, for in the primary anæmias a loud systolic mitral murmur may be audible, and when they are extremely severe a basal diastolic murmur may be detected. The pulse is rapid, and the first sound at the impulse so abrupt as to simulate very closely the lesion of mitral stenosis. In all three there may be fever, breathlessness, purpura, and some enlargement of the spleen. If the leukæmia shows a leucopenia, the differential count requires considerable skill, and the blood of an aplastic anæmia also requires skilled investigation. I have seen remarkable examples of the difficulty in the diagnosis of these cases, particularly when the original one of rheumatism has been made in error. The anæmia is generally more predominant in the blood disease than in rheumatism, and the so-called "rheumatic symptoms" usually resolve themselves merely into vague pains.

It is interesting to observe, when one of the curious remissions occurs in a primary anæmia, that almost all the cardiac signs also disappear, to recur with the relapse. This has no parallel in rheumatism.

The Thyroid.

It is possible that the thyroid gland may play a greater part in the disturbances of the heart in rheumatism than we realise. In this country Llewellyn Jones Llewellyn has for many years insisted upon its importance in rheumatic affections, and French writers have alluded to rheumatic thyroiditis in adolescents. I have recently seen four examples of thyroid enlargement with tachycardia, tremor, and acute rheumatic morbus cordis, though in none was there apparently any thyroiditis. The problem is difficult, for it is exceptional to find any obvious enlargement of the thyroid in children suffering from acute rheumatism, and so we are driven at present to the assumption that damage, if it is frequent, must be due to an increase or alteration in the secretion without any perceptible change in the size of the gland. Sometimes, but very exceptionally, I have noticed swelling of this gland in chorea, and in our ignorance of the nature of the rheumatic poisons and our knowledge of the remarkable nervousness of the rheumatic child we have reasons for investigating this subject further.

Summary.

It is clear that endocarditis in all its phases can be studied in the child, but in the adult we are usually concerned less with the development of endocarditis than with the results it has produced by scarring. In the child we learn in detail the history of pericarditis, and, though rheumatic pericarditis may occur in a patient over 70, opportunities for a complete study in adult life are far fewer. We learn also from the first the importance of the myocardium, and in the child we get striking illustrations of the symptoms that result from its general damage. We see how the "weak heart" may arise, and how, in the adult, this may give way under stress and strain. We are led to appreciate the nervous element, which is of such importance in the history of heart disease at all ages, and to realise how early in life this element may assert itself. The remarkable vitality and recuperative power of the child's heart impresses upon us the necessity for studying the factors which in adult life sap this vitality. There is the natural decline of cardiac power with the arrival of old age, but there are also the acquired factors, such as atheroma of the coronary vessels, high tension, or the damage done by poisons such as alcohol. Realising the freedom of the child's heart from these dangers, and guided by our knowledge of juvenile rheumatic heart disease, we are more easily able to appreciate such differences in the behaviour of these damaged adult hearts as the appearance of angina pectoris, the sudden disaster of a coronary thrombosis, or the defeat of a heart in the long battle against the strain of hypertension. We can see more closely the essential difference between the rheumatic child who breaks down from the renewed attacks of the active disease and the adult who, surviving an early rheumatism, breaks down from the gross deformities of the valves which have been left as its legacy.

We can also appreciate more fully the differing character of the lesions and symptoms that occur when an infection of another type peculiar to adult life—the acquired infection of syphilis—attacks the heart and blood-vessels.

We bring with us the same mental attitude to adult heart disease that we do to the heart disease of the child, and are led instinctively to search for the early warnings and early events that lead to its development.

We find our most promising fields for the study of mitral stenosis, and probably of malignant endocarditis, in the young. We can also learn the best methods for the prevention and amelioration of morbus cordis.

Finally, a problem in the study of heart disease in childhood which may eventually need careful thought is this: how will arrangements be made for the student of the future to obtain a general view of acute rheumatism in its true perspective if, as seems possible, he is to be educated by an orthopædic specialist in rheumatic arthritis, by a neurologist in chorea, by a children's specialist in acute rheumatic heart disease, and by a cardiac specialist in chronic heart disease? What will he eventually know of the general disease "acute rheumatism"—the chief cause of morbus cordis in this country? Should we not remember, before it is too late, words of that great genius, Roger Bacon, "As with an eye torn out, or a foot cut off, so it is with the different departments of wisdom; none can attain its proper result separately, since all are parts of one and the same complete wisdom"? Realising that this was the central theme of his *opus magnus* and the guiding star of that mighty intellect, should we not pause and think?

THE REGULATION OF RESPIRATION.

A SUMMARY OF RECENT EXPERIMENTS.*

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Several years ago, as a result of experiments on the effects of hæmorrhage and reinjection on pulmonary ventilation, I called attention to serious exceptions to the prevailing theories of respiratory control. For example, a systematic review of the relation of blood acidity to pulmonary ventilation revealed a more frequent inverse than a direct relation of pulmonary ventilation to the hydrogen-ion concentration of the blood. The common inverse relation of pulmonary ventilation to alveolar and arterial carbon dioxide pressure served as an exception to a primary control by changes in the arterial and alveolar carbon dioxide. Increased pulmonary ventilation associated with either low or excessively high alveolar oxygen pressure was an exception to the theory of the direct effect of oxygen on respiratory activity.

Our informaton on the chemistry of the blood, on the aerobic and anaerobic acid metabolism of the cell, and on the behaviour of the cell membrane to the movement of acid and base, hardly warranted the assumption of parallel changes in acidity within and without the metabolizing cell. The probabilities rather favoured a frequent occurrence of opposite changes in acidity within the cells and in the blood, and appeared to offer an opportunity of formulating an all-inclusive theory of respiratory control, avoiding the exceptions to the prevailing theories. In brief, a direct relation was assumed between the acidity of the respiratory centre itself and pulmonary ventilation.

* An address delivered at the opening of the university clinics and new medical laboratories at the University of Chicago.

With the use of various continuous methods, acute respiratory disturbances produced by administration of carbon dioxide, sodium carbonate, sodium bicarbonate, mechanical asphyxia, low and high alveolar oxygen, sodium cyanide, and hæmorrhage and reinjection were followed and analysed with respect to the acid base equilibrium of the tissues and body fluids.

The accompanying figure shows in a very schematic way the more outstanding results of our experiments. The first column tabulates the types of procedure, the second indicates the changes in acidity of the circulating arterial and venous blood, the third correlates the associated changes in pulmonary ventilation. The following column gives the changes in acidity of the cerebro-spinal fluid. the next shows the changes in expired carbon dioxide and oxygen using constant artificial ventilation, and the last column shows changes in carotid and femoral flow of blood.

An analysis of the second and third columns, showing changes in acidity of the arterial and venous blood and changes in pulmonary ventilation, will give a notion of the relation of pulmonary ventilation to blood acidity. The administration of carbon dioxide turns both the arterial and venous blood more acid, and pulmonary ventilation increases. Readministration of room air is accompanied by decreased acidity and a return to normal ventilation. Intravenous injection of sodium carbonate turns both the arterial and venous blood more alkaline, and pulmonary ventilation subsides. With recovery the blood swings back to normal acid values and ventilation increases. These observations fall into line with the older theory of respiratory control through the free hydrogen ions of the arterial blood, but the injection of sodium bicarbonate reveals an important exception. As the arterial and venous blood turn alkaline, pulmonary ventilation increases, and as the blood again swings, acid ventilation diminishes.

The next exception is found in the experiments on mechanical asphyxia with the lungs filled with room air, and with the lungs filled with pure oxygen. The gases were administered by artificial ventilation in volume sufficient to establish apnœa. The pump was then stopped. The changes in acidity of the arterial blood and the onset of respiratory movements were recorded. When the lungs were filled with room air, the acidity of the arterial blood increased slowly and respiratory movements came on rapidly. But when the lungs were filled with oxygen the acidity increased rapidly and the onset of increased respiratory movements was delayed. Another common exception to the theory of respiratory control by the free hydrogen ions in the arterial blood is seen in the effects of low alveolar oxygen, whether administered by artificial ventilation or by normal ventilation. In either case both the arterial and venous blood turn alkaline and ventilation is increased. On readministration of room air the blood turns acid and ventilation subsides. The intravenous injection of sodium cyanide may turn the arterial and venous blood either acid or alkaline, depending upon whether artificial ventilation is administered or whether ventilation is normally controlled. In either case respiratory movements are increased. The effects of cyanide may then be said to support and contradict the blood acidity theory of control.

Whether ventilation is artificial or normal, hæmorrhage turns the arterial blood more alkaline, at the same time increasing respiratory movements. Reinjection turns the arterial blood more acid and depresses ventilation. On the other hand, if we follow the changes in acidity of the venous blood, we find the relation between blood acidity and ventilation reversed. The increased acidity of the venous blood during hæmorrhage is associated with increased respiratory effort, and the decreased acidity following reinjection is associated with decreased respiratory effort.

To summarize, in three procedures there is a direct relation between the hydrogen-ion concentration of the arterial blood and pulmonary ventilation: the administration of carbon dioxide, sodium carbonate, or cyanide during constant artificial ventilation. In five procedures there is an inverse relation between the hydrogen-ion concentration of the arterial blood and pulmonary ventilation: intravenous injection of sodium bicarbonate, mechanical asphyxia, administration of a gaseous mixture low in oxygen, intravenous injection of cyanide during normal ventilation and hæmorrhage. In all procedures other than hæmorrhage the directional changes in the acidity of the arterial and venous blood are the same. In hæmorrhage the directional changes are opposite. Despite the fact that the arterial blood, which flows more slowly through the lungs, is more thoroughly ventilated, both with respect to oxygenation and elimination of carbon dioxide, the highly alkalinized arterial blood, after passing through the tissues comes out more acid than normal. Obviously the slackened circulation through the tissues has resulted in greater acidification. This supports the view that acidity of the tissues may perhaps be a more important factor than acidity of the blood in the control of ventilation.

To follow up this view we may turn again to procedure number one. Though the administration of carbon dioxide turns both the arterial and venous blood more acid, the increase in acidity of the arterial blood is more abrupt and extensive than that of the venous blood. This suggests that carbon dioxide has passed from blood to tissues, so that the tissues have served as buffer to the blood. The slower return to normal acid values on the venous side on readministration of room air suggests the passage of accumulated carbon dioxide from the tissues back to the blood. The evidence is in favour of increased tissue acidity from administration of carbon dioxide. This is supported by the changes in hydrogen-ion concentration of the cerebro-spinal fluid. During the administration of carbon dioxide the fluid turns distinctly acid, and with the readministration of room air its acidity diminishes.

Effects of Sodium Carbonate.

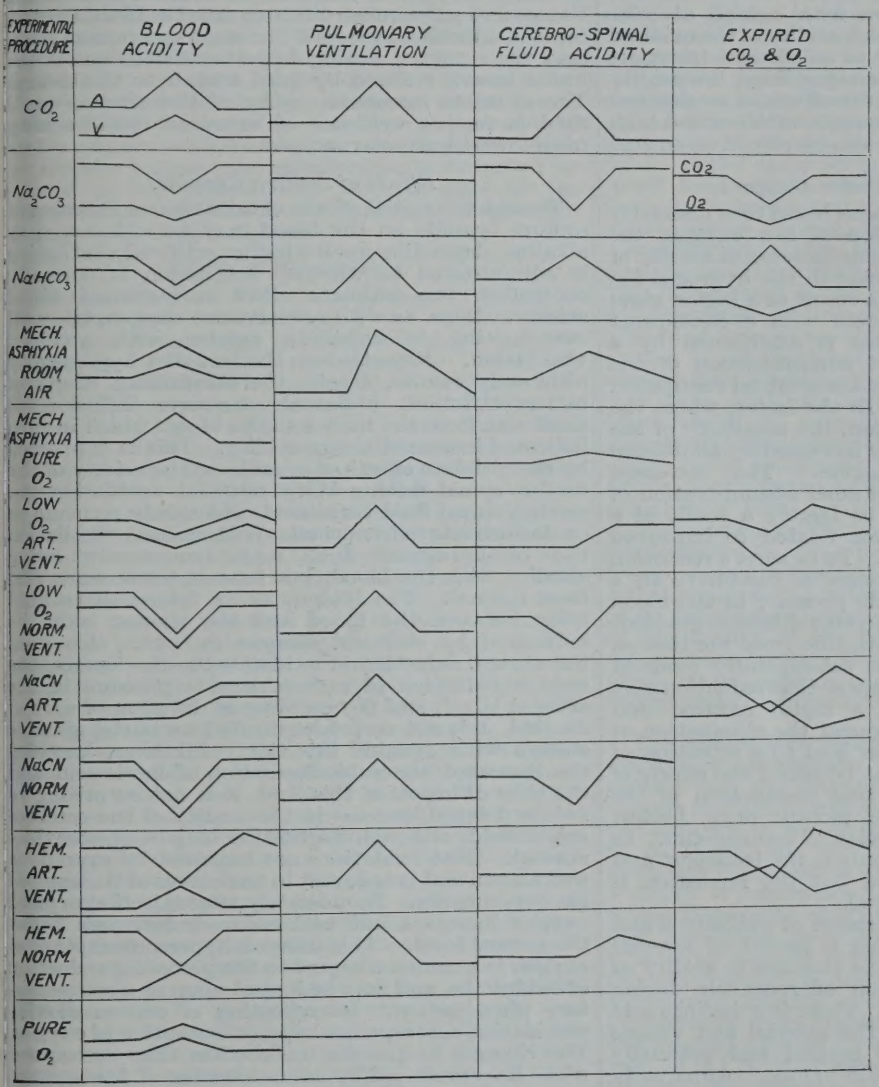
When sodium carbonate is injected the picture is reversed. The presence of a free base capable of combining with carbon dioxide and lowering the carbon dioxide pressure in the blood leads to a greater movement of carbon dioxide from the tissues to the blood. A comparison of the acidity curves of the arterial and venous blood indicates the absorption of carbon dioxide by the blood as it passes through the tissues, for the increase in alkalinity of the arterial blood is relatively great compared with the increase in the venous blood. The decreased hydrogen-ion concentration of the cerebro-spinal fluid suggests the passage of carbon dioxide from the brain-tissue fluids into the blood.

The possibility of movement of free base from the blood into the tissue fluids should be also considered. In this respect the experiments on expired gases are helpful. Constant artificial ventilation is administered during pneumothorax; changes in expired carbon dioxide and expired oxygen indicate changes in carbon dioxide elimination and oxygen consumption. Upstroke on either record indicates an increasing content of either gas in the expired air. With a continuously administered gas, such as room air, upstroke on the carbon dioxide record indicates increasing carbon dioxide elimination, and upstroke on the oxygen record indicates decreasing oxygen consumption. Where the oxygen content of the gas is changed by administration, special analysis of the oxygen record is required to determine the changes in oxygen consumption. Inspection of the diagram of changes in expired gases on the injection of sodium carbonate during the administration of room air shows two changes, decreased elimination of carbon dioxide by the lungs and increased oxygen consumption. The coincidence of increased oxidation and decreased elimination of carbon dioxide is satisfactory evidence of the lowering of the carbon dioxide tension of the blood and accelerated movement of carbon dioxide from the tissues into the blood. It is, therefore, conceivable that the brain may have turned less acid

primarily as a result of increased diffusion of carbon dioxide. On this point the experiments on sodium bicarbonate seem more to the point, but in any event the depressed ventilation appears to be associated with decreased acidity of the tissues.

The stimulating effects of intravenous injection of sodium bicarbonate constituted one of the major difficulties in arriving at a satisfactory theory of respiratory control, and led to theories of the specific action of the HCO_3 ion and of carbon dioxide. In attempting to explain the action of sodium bicarbonate on a purely acid mechanism, account was taken of the semi-permeability of cell membranes, of the freedom of movement of carbon dioxide and undissociated carbonic acid, and of the effects of sodium bicarbonate on the carbon dioxide buffer system of the blood. Assuming first that the addition of sodium bicarbonate affects the equilibrium of the buffer system with an increase in the freely diffusible carbon dioxide and carbonic acid, a back pressure of carbon dioxide is immediately established, retarding the normal movement of acid from tissue to blood. Increasing tissue acidity should result, granting that the semi-permeability of the cell membranes acts as sufficient barrier to the increased metallic kations. It is obviously extremely difficult to perform the direct experiment of following changes in acidity of a neurone of the respiratory centre with injection of sodium bicarbonate, but inasmuch as the cerebro-spinal fluid is separated from the blood by membranes which appear to possess selective action, it seemed worth while to determine the effects of intravenous injection of sodium bicarbonate on the acidity of the fluid. Increased acidity was found to occur. If we may infer that similar changes in acidity occurred within the brain cells, the respiratory response may be explainable on a strictly acid basis and the specific action of the HCO_3 ion abandoned.

The effects of massive injection of sodium bicarbonate on expiratory gases support the theory of the acid mechanism of respiratory control. It will be seen, for example, that the carbon dioxide elimination is enormously increased. Oxidations are also increased but not in proportion to the carbon dioxide elimination. In one experiment the expired carbon dioxide was increased from 4·34 per cent. to 9·10 per cent., a total increase of 4·76 per cent. The associated increase in oxygen consumption amounted to only 1·6 per cent. These figures correspond to an increase in the expiratory quotient from 0·91 to 1·42. While several factors probably contribute to this high expiratory quotient, the results are in line with the postulate that the addition of sodium bicarbonate to the blood may momentarily drive the carbon dioxide in two directions—into the tissues and into the alveolar air. The view that the tissues may temporarily be turned more acid by the injection of base is thus upheld by the expired gas experiments as well as by the cerebro-spinal fluid experiments.



Mechanical Asphyxia.

In the mechanical asphyxia experiments, if we are justified in using the changes in acidity of the cerebro-spinal fluid as an index to the changes in acidity of the brain, we are forced again to conclude that the correspondence between blood and tissue acidity is uncertain. Inspection of the chart shows that mechanical asphyxia with the lungs filled with room air leads to a greater increase in acidity of the cerebro-spinal fluid than asphyxia with the lungs filled with oxygen, though the increase in acidity of the blood is considerably less. These acid-base relations in tissue and blood are presumably explainable by changes in acid metabolism at the cells, and in disturbances in the transport and elimination of carbon dioxide due to a broken coördination of the dual function of hæmoglobin. The increased acidity of the cerebro-spinal fluid is probably a result of impaired oxidations and impaired transport of acid, with a resultant diffusion of fixed and free acid into the fluid. The smaller increase in acidity of the arterial blood with the lungs filled with room air is traceable to the alkaline effect of liberation of free base, which goes hand in hand with progressive reduction of oxyhæmoglobin. A highly reduced blood, heavily laden with acid, incapable of the normal liberation of oxygen and base at the

tissues, returns to the lungs with a small increment of carbon dioxide. Failure in oxidation at the lungs leads to retention of carbon dioxide by the blood. A highly reduced alkaline hæmoglobin is, therefore, in equilibrium with a relatively low alveolar carbon dioxide tension. During mechanical asphyxia with the lungs filled with oxygen a highly oxidised blood, lightly laden with carbon dioxide and capable of great liberation of oxygen and alkali at the tissues, returns with a large increment of carbon dioxide. Subsequent oxidation of the hæmoglobin at the lungs efficiently expels carbon dioxide. A well-oxidised hæmoglobin is in equilibrium with a high alveolar carbon dioxide tension. The high acidity of the oxidised hæmoglobin is thus indicative of an efficient transport of acid and suggestive of a correspondingly low acidity of the tissues. If this is true, the effects of mechanical asphyxia on respiratory movements with low and high alveolar oxygen pressure may also be placed on an acid basis.

Effects of Low Alveolar Oxygen.

Though the arterial and venous blood turn distinctly alkaline on the administration of low oxygen, the evidence points to a synchronous increase in acidity of the tissues. The major decrease in the hydrogen-ion concentration of the blood is a result of a higher state of reduction of the hæmoglobin with a consequent liberation of free base. This is established by a comparison of the effects of administration of the same gaseous mixture by constant artificial ventilation and by normal ventilation. In the latter, where the animal augments its ventilation, the alkalinity of the blood may be only moderately increased by additional washing-out of carbon dioxide. The increased alkalinity of the blood with normal administration of low oxygen may, therefore, be largely a result of a chemical change which is not related to improved elimination of carbon dioxide. To be sure, a reduction of oxyhæmoglobin at the tissues is conducive to a lowering of the carbon dioxide pressure in the blood and the maintenance of an effective diffusion gradient for the movement of carbon dioxide from the tissues. However, unless the blood is subsequently oxidised and freed of its acid at the lungs so that reduction may be repeated at the tissues, a highly reduced and alkalinised blood will not augment the elimination of carbon dioxide, but will rather lead to a retention of acid. To these conditions must be added the effects of impaired oxidations on the acid metabolism of the tissues, which complete the picture of a broken coördination of the dual function of hæmoglobin. In accordance with theory, not only is the transport and elimination of acid hampered but the formation is momentarily augmented as well.

Indirect evidence for impairment of oxidations and increased tissue acidity during a period of lowered alveolar oxygen is found in the changes in acidity of the blood on readministration of room air during constant artificial ventilation. There is a distinct acid overshooting of the blood. The arterial and venous blood turn more acid than normal and gradually return to the preadministration values. Apparently acid has been accumulating in the body though the blood was turning more alkaline. As further evidence we may note the effects of lowered alveolar oxygen on the hydrogen-ion concentration of the cerebro-spinal fluid. Lowered oxygen increases the acidity, and readministration of room air leads to recovery. The expired gas experiments add to the picture. With the administration of low oxygen the elimination of carbon dioxide falls off at once. If acid is being formed at the usual rate it must thus necessarily be retained. Readministration of room air promptly leads to increased carbon dioxide elimination, which gives way to overshooting and recovery. The carbon dioxide overshooting is accompanied by supernormal oxygen consumption, indicating impairment of oxidations during the period of lowered alveolar oxygen. It is interesting to note the correspondence of the blood acidity and the expired carbon dioxide curves with the administration of low oxygen and readministration of room air by artificial ventilation.

Though the evidence is favourable for increasing acidity of the tissues during the administration of low oxygen by artificial ventilation, it is not as decisive with normal ventilation because of the added washing out of carbon dioxide from augmented ventilation. The acidity records of the blood under these conditions show decidedly less acid overshooting, particularly with short administrations of low oxygen; but when the administrations are prolonged and severe, distinct acid overshooting invariably occurs, despite the fact that ventilation may be greater than normal. This is evidence for excessive formation of fixed acids in the tissues and subsequent diffusion into the blood stream for it is difficult to see how the blood can remain more acid than normal during hyperventilation unless the buffer base is reduced by fixed acids from the tissues. The ultimate increased acidity of the cerebro-spinal fluid is further evidence of increased tissue acidity from lowered alveolar oxygen.

Effects of Sodium Cyanide.

Though the initial effects of intravenous injection of sodium cyanide on the blood may be either acid or alkaline, depending upon whether artificial ventilation is administered or whether ventilation is normally controlled, the ultimate effect is increased blood acidity. Here, as with low alveolar oxygen, the acid overshooting is definitely greater with artificial ventilation. Nevertheless, the fact that hyperacidity ultimately results, despite the alkalinising effects of hyperventilation, indicates excessive diffusion of fixed acid from the tissues to the blood, which in turn indicates increased tissue acidity. This is supported by the ultimate effects of cyanide on the acidity of the cerebro-spinal fluid. With artificial ventilation the cerebro-spinal fluid turns acid, and slowly recovers as oxidations return to normal. With normal ventilation the cerebro-spinal fluid may temporarily swing alkaline with the blood, but later it turns more acid than normal. The lymph, as an intermediate fluid lying between the blood and the tissues, must be influenced by chemical changes in both. Knowing the abrupt reduction of oxidations in the tissues, the sudden reduction of carbon dioxide pressure in the arterial blood, and the rapidity of diffusion of carbon dioxide, it is not surprising to find an initial alkaline change with cyanide injection. Likewise, knowing the increased anaerobic formation of lactic acid and the slow diffusion of this acid, it is not surprising to note a delayed increase in the acidity of the cerebro-spinal fluid, although ventilation may be greater than normal. That oxidations are impaired by cyanide is well known and is apparent in the curves of the expired gas experiments. Immediately after injection expired oxygen increases, but with recovery decreases below the normal level. This delayed hyperconsumption of oxygen is a common sequel to the preceding reduction of oxidations, and may be looked upon as a compensatory phenomenon. Overshooting of carbon dioxide elimination accompanies hyperconsumption of oxygen. The changes in gaseous metabolism thus correspond with those produced by administration of low oxygen followed by readministration of room air. The curves of expired carbon dioxide agree in contour with the blood acidity curves when cyanide is given during constant ventilation.

The expired gas experiments in which the expiratory quotients were followed seem to indicate more explicitly the changes in acid metabolism occurring with cyanide administration and recovery. For example, during the early period of administration the expiratory quotient increases, and during recovery it may fall below normal. In one experiment the expiratory quotient rose from 0·98 to 2·02 and subsequently fell to 0·91. In another experiment it rose from 0·93 to 1·39 and fell during recovery to 0·82. The increased expiratory quotient during the initially decreased expiratory exchange is believed to agree with an increased anaerobic production of fixed acid. The subsequent decrease in the expiratory quotient is believed to agree with retention of carbon dioxide and with the dual mechanism of oxidative and non-

xidative removal of lactic acid. It is interesting to ote that the expiratory quotient may be reduced elow normal during the recovery period, when arbon dioxide elimination may be considerably higher han normal. This marks a period of relative retention hich soon gives way to absolute retention of carbon ioxide.

The changes in tissue acidity produced by cyanide nd low oxygen are probably very similar, though the echanism producing them is somewhat different. In ach there appears to be an altered acid metabolism n favour of increased anaerobic production of acid, ombined with a break in the coördination of the dual nction of hæmoglobin. With cyanide administra- ion the coördination is disturbed by a more or less ermanently oxidised state of the hæmoglobin. lkali is neither liberated in abundance at the tissues or recalled in the lungs, for the tissues are unable to se the oxygen with which they are provided. With ow alveolar oxygen the coördination is disturbed by more or less permanently reduced state of the æmoglobin. The tissues are unable to obtain the xygen which they could use.

Effects of Hæmorrhage.

Whereas the same directional change in acidity of he arterial and venous blood is the rule for most rocedures, hæmorrhage is characterised by opposite hanges in hydrogen-ion concentration. That this ifference is attributable to the effects of volume flow f blood is clearly demonstrated by the fact that the rterial blood turns alkaline with hæmorrhage when onstant artificial ventilation is administered as well s when augmented ventilation is permitted during ormal control. Obviously the greater movement of ir under normal conditions is not the sole contributing ause of the increased alkalinity of the arterial blood. t stands to reason that, if the degree of ventilation is function of the amount of air to which a unit volume f blood is exposed in a unit of time, the ventilation of he blood may be increased by either augmenting the novement of air, or decreasing the flow of blood. The arge increase in alkalinity of the arterial blood with onstant artificial ventilation graphically illustrates he significance of volume flow of blood in the acid- ase equilibrium of tissues and tissue fluids. Just as olume flow of blood through the lungs determines he alveolar and arterial carbon dioxide pressure, so oes the volume flow of blood through the tissues letermine the tissue and venous acid pressures. If ecreased flow of blood through the lungs permits a nore complete elimination of carbon dioxide per unit f blood, decreased flow of blood through the tissues nust entail a greater accession of acid per unit of lood. Even granting an unmodified acid metabolism, diminished flow must lead to increased venous acid ressure with a damming-back of acid in the tissues. But adding to this the usual picture of impaired xidations with its associated disturbances in the dual unction of hæmoglobin, increased acidity of the tissues s more clearly indicated. Certainly, if the arterial lood which has just been turned 0·3 to 0·4 pH more lkaline as a result of hæmorrhage will leave the tissues listinctly more acid than normal, there is little room o doubt that the tissues have also turned more acid. n the expired gas experiments hæmorrhage reduced he oxygen consumption and carbon dioxide elimina- ion, and reinjection of blood elicited typical carbon ioxide overshooting, associated with hypercon- umption of oxygen. A comparison of the curve of xpired carbon dioxide and the arterial acidity curve vill show the same correspondence as in the cyanide nd low oxygen experiments with constant artificial entilation. The increase in acidity of the cerebro- pinal fluid after hæmorrhage supplements the evidence or increased tissue acidity with decreased flow of blood nd decreased acidity with increased flow of blood.

Conclusion.

Our experiments establish a lack of correspondence etween blood acidity and pulmonary ventilation on he one hand, and indicate a correspondence between tissue acidity and pulmonary ventilation on the other hand. Granting that this relation is a causal one, we have advanced one step in the solution of the problem of respiratory control, but the exact mechanism by which acidity operates cannot be predicted until the problem of automatic discharge of rhythmically active cells is better understood. This, admittedly, is a fundamental biological problem of the widest scope. If the rhythmic discharge of the respiratory neurones is a membrane phenomenon. dependent on the structure and composition of the membrane and the nature of the fluid on each side of it, the relation between changes in the acidity of the immediate cell environment and changes in ventilation should be analysed as carefully as the data will permit. Up to the present no direct method has been employed for studying changes in acidity of the tissue fluids in the brain. The closest approach to the problem has been the study of changes in acidity of the cerebro-spinal fluid. If the assumption is correct that the cerebro-spinal fluid reflects changes in acidity of the tissue fluids in the brain, and if acidity is the primary factor in respiratory control, then changes in hydrogen-ion concentration within the cell rather than in the immediate cell environment is the predominant factor. This is indicated in the experiments on the effects of administration of low oxygen and of cyanide on the acidity of the cerebro-spinal fluid. When low alveolar oxygen is administered by artificial ventilation, the cerebro-spinal fluid may show no immediate change or may turn distinctly acid, but when the oxygen is administered by normal ventilation the change is sharply alkaline, yet ventilation is markedly stimulated under both conditions. When sodium cyanide is administered during artificial ventilation the cerebro-spinal fluid turns acid, but if it be injected during normal ventilation the change is alkaline. Respiration is stimulated in either procedure. While these results by no means indicate that acidity of the immediate cell environment is without effect upon the behaviour of the respiratory centre, they do suggest that changes in the acidity of the interior of the cell is a more determinant factor. However, the elaboration of this phase of the subject must remain in abeyance until further data are obtained.

The results here described represent the work of a number of individuals. The problem of respiratory control was an outgrowth of the studies on blood volume and tissue nutrition begun at the University of California in which E. Blair, C. S. Capp, F. Foote, C. A. Moyle, and R. T. Trotter participated. The work was continued at Washington University, where a theory of respiratory control was outlined and then at the University of Michigan, where several methods and procedures were developed to test the theory. C. S. Capp assisted in the preliminary experiments on the continuous registration of pH changes with the manganese dioxide electrode. These uncompleted experiments were continued the following year and the method applied to animal experiments with the help of A. B. Hertzman. The method for the continuous electrometric registration of volume flow of blood was developed with the help of D. W. Bronk, and the animal experiments continued with the help of D. W. Bronk, T. Bernthal, and N. Codero. The electrometric methods of registering changes in expired oxygen and carbon dioxide were developed with the help of D. A. McGinty, who also participated in the later animal experiments. In this brief summary of our work no effort is made to cover the work of others.

BEQUEST OF A BODY.—The late Mr. H. Reeve Everitt, solicitor, of Lowestoft and Norwich, left £100 "and my body to Dr. Arthur Cleveland, in order that he may arrange an autopsy thereon for the benefit of science, and I have left to him the before-mentioned legacy of £100 expressly to cover the cost of this operation and for a meeting of such members of the medical fraternity as he may choose to invite to discuss such unusual points o professional interest as may arise."

THE SERUM TREATMENT OF CUTANEOUS ANTHRAX.

WITH NOTES ON DIAGNOSIS.

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In dealing with the treatment of cutaneous anthrax most modern text-books, whilst recognising the value of anti-anthrax serum and recommending its use, still advise surgical excision of the local lesion. During the past four and a half years the cases enumerated in the following table, which have come under my care, have been treated solely with serum, without any resort to excision of the "malignant pustule," the only local application being eusol fomentations.

Results of Serum Treatment.

No.	Age and sex.	Days ill on admission.	Site of lesion.	Serum injected in c.cm.	Number of injections.	Result.
1	42 F	5	Left cheek	400	5	Recovery
2	40 M	5	L. forearm	360	5	„
3	20 F	3	L. upper arm	80	3	„
4	40 M	2	Angle of jaw	220	4	„
5	22 M	5	Back of neck	645	6	„
6	49 M	4	R. forearm*	840	7	„
7	23 M	4	Lower lip	360	4	„
8	49 M	4	Neck, behind ear	370	5	„
9	22 M	3	Back of neck	270	3	„
10	34 F	3	L. cheek	180	3	„
11	28 M	2	Below angle of jaw	360	4	„
12	30 M	6	Back of neck	130	1	Died.†
13	26 M	3	„ „	270	3	Recovery
14	24 M	2	L. cheek	160	2	„
15	45 M	2	Back of neck	210	3	„
16	39 M	3	R. cheek*	410	5	„
17	18 M	4	L. cheek	295	4	„
18	20 M	5	Side of neck	330	4	„
19	19 M	2	L. cheek	260	3	„
20	18 F	1	L. great toe	180	2	„
21	34 F	3	Side of neck	270	3	„
22	30 M	1	L. wrist	90	2	„
23	52 M	3	Back of neck	510	5	„
24	19 M	3	L. forearm	240	3	„
25	51 M	4	„	210	2	„
26	41 M	3	R. wrist	270	3	„
27	50 M	7	Neck, middle line, in front	180	1	Died.‡
28	44 M	4	L. cheek	320	3	Recovery
29	19 F	4	R. upper arm	450	4	„
30	61 M	5	R. cheek*	600	2	„
31	28 M	4	R. gluteal fold	330	2	„

Except on four occasions, when an intramuscular injection was made, the serum was given intravenously.
* Two foci. † 15 hours after admission.
‡ 4 hours after admission.

With few exceptions the intravenous route has been chosen for the injection of serum by reason of its prompt therapeutic effect, a distinct advantage in so rapidly ingravescent a disease as anthrax.

The usual glass funnel and tube apparatus is used and the gravitation method of injection is employed, the serum, &c., being warmed in a water bath at 100° F.

The possibility of the occurrence of anaphylactic symptoms must be borne in mind and, if considered desirable, a preliminary test injection of 0·5 c.cm. of serum subcutaneously, half an hour before the major injection, may be made. My experience has led me to omit this test injection, and to begin with 50 c.cm. sterile normal saline solution to which five drops of serum have been added. This is allowed to flow into the vein slowly. In the absence of any untoward signs the concentration of the mixture in the funnel is gradually increased until pure serum is passing. One of the veins in the ante-cubital space is usually chosen for the injection, though in fat subjects the dorsal veins of the hand are sometimes easier of access.

At all times, however, when giving an intravenous injection of serum, it is wise to have at hand a hypodermic syringe, ready charged with atropin sulph., gr. 1/100, for use in case of sudden respiratory spasmodic changes. Twice, in the series under review, have sudden cyanosis and threatened respiratory spasm caused some degree of alarm. In these circumstances the intravenous method has been abandoned and the serum given intramuscularly. Oft the patient will complain of a feeling of oppression and he and may perspire; but these symptoms usually disapp as confidence increases with subsequent injections.

Dosage and Effects of Serum.

As in other therapeutic sera, no precise rule c be enunciated, but early administration, and th with a generous hand, is the first element of succe As will be seen by a reference to the table, my choi is definitely tending to a large initial dose and qui repetition of the injections, as circumstances deman

Three factors which operate in each case ar (1) The duration of the disease when the case fi comes for injection—i.e., the day of disease; (2) t degree of toxæmia; and (3) the site of the lesion.

Day of Disease.—The earlier the serum is given t more quickly and easily is the advance of the loc lesion and the resultant absorption of toxins arreste Up to three days, generally speaking, the disease controllable, but after this the treatment rapid becomes more anxious and prolonged.

Degree of Toxæmia.—The personal resistance of t patient has an undoubted bearing on this, and possib there may be some variability in virulence of t infecting organism also, since it is noticeable that o case appears to develop signs of toxæmia more rapid than another, whilst, on the other hand, the effec of the serum are more quickly shown in some cas than in others. A putty-like pallor of the fac listlessness, low tension pulse, sighing respiratio unduly raised temperature, and restlessness alone variously combined are ominous.

Site of the Lesion.—An anthrax infection within near the anterior triangle of the neck is alwa closely attended by the possibility of the swelling ar œdema involving the root of the tongue, the pharyn or particularly, the larynx, and hence this ar demands an early large dose of serum in order, promptly as can be, to limit local inflammato swelling. Similarly a lesion near the eyelids may l subsequent sloughing produce disfiguring contractur It may be taken as a rough rule that the further awa from the neck that infection is located, the less like is trouble to be encountered.

The effects of the serum are evidenced locally about 24 hours by a cessation of further inflammato swelling, the formation of vesicles abates, the temper ture may be somewhat lower, and the patient fee easier. Later the induration shows a slow thou definite decline and the part is less swollen. Coincide with these changes the temperature and the pulse-ra fall, usually by a lysis covering two, three, or mo days, according to the severity of the case. Meanwhi the vesicles have ruptured or collapsed, and the centr dark necrotic zone shows around itself a narrow ri of inflammatory "casting off" reaction. It is n practice to continue giving serum daily until t temperature has definitely fallen to normal lev In passing, I would emphasise that a reliable and ful potent serum is essential to successful treatment in condition so rapid in its progress as anthrax. In t cases here tabulated I have used the serum of thr different makers, and of these I must state that f potency and prompt antitoxic response that supplie by Messrs. Parke, Davis is definitely superior to t others.

The further behaviour of the cases, once seru treatment has been completed, is remarkably fr from serious incident. Serum rashes, alone accompanied by arthralgia and pyrexia, as might l expected after the administration of large amount were comparatively severe when they occurred, b a fair proportion of the patients escaped entirely.

The healing of the local focus varied in length time from 14 days to 35 days, according to the ar of the initial lesion and the mass of the resultin slough. Except in one case (No. 29) the final sc was comparatively unnoticeable. One man (No. 1 a mild case, reported to me that he had front neuralgia for three months after his scar had heale

ase No. 29, mentioned above, showed a striking infection on the fourth day of treatment—i.e., ter the intravenous injection of 300 c.cm. of serum. ne primary focus was typical and about 30 mm. in ameter, and was situated at the inner side of the sertion of the right deltoid. At first the patient peared to be making good progress, but on the urth day there appeared a new crop of vesicles and bjacent inflammation covering an area of about 0 sq. cm., extending almost to the elbow flexure. due course a large superficial slough resulted. ne subsequent ulcer was successfully overcome by in-grafting.

Included in the series are two fatal cases. Both came te under treatment. One patient died 15 hours ter admission, and the other, moribund on arrival, ed four hours afterwards.

Diagnosis.

From the foregoing it is claimed that the early dministration of anti-anthrax serum in sufficiently rge doses has a marked curative effect in the disease. The recognition of cutaneous anthrax at an early oment is by no means easy, and consequently propriate treatment may be seriously delayed. The ty and port of Liverpool have the largest trade wool, hair, and hides in the world; in the strict there are many tanneries, &c. Hence the cal medical practitioners are to some extent on the ert for the possibility of anthrax in the human bject.

An angry "pimple" or papule, without pus, rrounded by a disproportionately large inflammatory eola, especially if it is situated at or near a "rubbed" ea, such as the collar or coat-cuff region, should rouse suspicion. Rapid increase of inflammatory dness and swelling, and the formation of a small ark centre with a ring of vesicles should demand stant action. Pain of an acute type is not always esent. The term "pustule" is, in my view, nfortunate and misleading. I have not yet seen a malignant pustule" in which, in the early pre- oughing phrase, there was any pus evident. The lly developed lesion is strikingly characteristic, owing the brown, purple, or purple-black centre, ne ring of yellowish vesicles, and the red, hard, rrounding cellulitis, involving an area extending it of all proportion to the primary focus of infection. he occupation of the patient—e.g., butcher, farmer, nner, dock labourer, or worker in hair, wool, or lied trades—may give a hint. The likelihood of fection from shaving brushes has now, fortunately, en minimised.

Discovery of *Bacillus anthracis* by examination of film made from a swab taken from the part is, course, conclusive evidence. Kneading of the sion or rupture of a vesicle gives enough serous udate with which to make a swab and culture. sually the large Gram-positive anthrax bacillus is sily found, but I have met cases in which, though cally and constitutionally the evidence left no doubt to the diagnosis of anthrax, the organism could ot be found in a direct film, its presence being proved ly by culture or animal inoculation. In any doubtful rcumstance the wisest course is to give serum. he bacteriological confirmation can then be under- ken without any harmful delay.

Amongst other conditions sent to this hospital as nthrax are simple pustules, boils, carbuncles, insect tes, cellulitis, and accidental vaccinia.

Thanks to the efforts of Dr. A. A. Mussen, the edical officer of health, employers of wool and air workers are with increasing frequency sending the Fazakerley Hospital any person who may show ven a slightly suspicious "spot" for examination. Vith the same object propaganda by means of sters about the docks and allied warehouses and ctories in which hides, &c., may be handled, will nder those concerned more alive to the benefits hich follow early recognition and treatment of nthrax infection.

In the past year I have given anti-anthrax serum, empirically, in 10 c.cm. doses, subcutaneously, as a prophylactic, to persons definitely exposed to anthrax infection, in nine instances. These included sanitary inspectors, farmers, and slaughterers who handled the carcasses of cows which had died of anthrax. Although skin scratches or other open wounds were present, none of the men injected developed the disease.

In conclusion I gratefully acknowledge the permission of Dr. Claude Rundle, Medical Superintendent of the City Hospitals, Fazakerley, to describe the cases quoted.

THE TREATMENT OF EPIDERMOPHYTOSIS OF THE TOES (MANGO TOE)

AND CERTAIN OTHER FORMS OF EPIDERMOPHYTOSIS BY A FUCHSIN PAINT.

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EPIDERMOPHYTOSIS of the toes is extremely common in the tropics, where it is known by a variety of names—mango toe, Hong-Kong toe, Cantlie's foot-tetter, &c. In recent years the condition has become quite common also in countries situated in the temperate zones, including this country. It is caused, as proved by Sabouraud and Whitfield, by the same fungi that cause ordinary dhobie itch (tinea cruris, tinea inguinalis), the principal species of these fungi being *Epidermophyton cruris*, Castellani, 1905 (synonym *E. inguinalis*, Sabouraud, 1907), and *Epidermophyton rubrum*, Castellani, 1909. Both these fungi were found and described by me in Ceylon in cases of dhobie itch.

The treatment is most difficult as every tropical practitioner and every dermatologist can well testify; it is easy enough to induce a temporary disappearance of the symptoms, but a complete eradication of the infection is in many cases almost impossible, the condition usually recurring after a period of apparent cure. Three years ago, after carrying out a fairly large number of experiments, I introduced in the treatment of the condition a fuchsin paint which has given me very satisfactory results.

Formula of the paint.—The paint has the following formula: saturated alcoholic solution of basic fuchsin 10 c.cm., 5 per cent. aqueous carbolic acid solution 100 c.cm. Filter and add boric acid 1 g. After two hours add 5 c.cm. of acetone; two hours later add resorcin 10 g. The paint should be kept in a dark coloured bottle with glass stopper.

The paint is the ordinary carbol-fuchsin used in bacteriological laboratories for staining tubercle bacilli, to which 1 per cent. boric acid, 5 per cent. acetone, and 10 per cent. resorcin have been added. As a matter of fact simple carbol-fuchsin alone gives good results, but the addition of the boric acid and the acetone seems to enhance its action and make it more penetrating, and resorcin certainly increases its efficacy in most cases. It is applied to the affected parts with a small wad of cotton-wool or a small sponge every day, in some cases several times a day, or every other day or twice a week; if very acute eczematoid symptoms are present it may be diluted with the same amount of water, but usually it may be safely applied undiluted even to most acute eczematoid conditions provided they are of true epidermophytic origin. Certain cases—very exceptional—seem to answer better when the resorcin is omitted from the paint.

Epidermophytosis interdigitalis pedum (mango toe).—In all acute and chronic cases of epidermophytosis

interdigitalis pedum the result is generally satisfactory, especially so in cases with secondary pyogenic infection. In the past, when the associated pyogenic infection was very heavy and there was present diffuse redness with small pustules and abrasions, I used, at first, to keep the parts moist with a saturated boric lotion or a boric resorcin lotion, for two or three days before starting the fuchsin paint. Now, however, in every case, I use the fuchsin treatment immediately with good results. With regard to the details of the treatment,—viz., frequency of applications, length of treatment, &c.—each case has, of course, to be treated on its own merits, but a safe general rule is to apply the paint freely two or three times daily for a week, then give three days' rest, then apply the paint again once or twice daily, for another week. In some cases the treatment has to be carried out for a much longer period of time.

Other types of epidermophytosis. Mycotic pruritus ani et vulvæ.—In addition to epidermophytosis of the toes I found the paint useful in certain other types of epidermophytosis. As I have stated elsewhere a fairly large number of cases of pruritus ani and pruritus vulvæ are of mycotic origin; very often we are dealing with a latent epidermophytosis with superadded saccharomycetic, cryptococcal, monilial, and bacterial infections. In a number of these cases the paint acts well.

Illustrative case.—Mrs. A. (London) complained for several weeks of unbearable vaginal and anal pruritus. On examination an eczematoid condition of the labia majora and of the perianal region was present; the patient complained of pruritus also in the labia minora and in the clitoris. The paint was applied freely not only to the external surface of the labia majora but also to the internal surface, and also to the labia minora and clitoris; at first diluted with equal part of water, then neat as it caused no smarting. The application was done at first every other day, then twice a week, then once a week. Within three weeks the condition was completely cured. From this case, before starting the treatment, an epidermophyton (*E. rubrum*) was grown and, in addition, a monilia and various bacteria, also a most peculiar organism which I was uncertain at first how to classify as certain forms of it resembled a cryptococcus, others a thick bacillus. I have described it elsewhere under the name *Bacillus multiformis.* (Proc. Soc. Exper. Biol. and Med., 1928, xxv., 539.)

Epidermophytosis cruris (inguinalis); epidermophytosis corporis.—While most cases of tinea cruris (dhobie itch) answer well to the usual routine treatment by salicylic-benzoic acid ointment (Whitfield's ointment) consisting of salicylic acid grs. xxx., benzoic acid grs. xxx., and vaseline 1 oz., or my older salicylic-sulphur ointment (ac. salicyl. grs. xxx., sulphur præc. grs. xxx., vaseline ad ℥i.) in a certain percentage of cases the result is unsatisfactory, and in some of these I have found the paint useful. As a method of routine, however, the use of ointments is much simpler and preferable.

Cases of epidermophytosis simulating moist eczema.—In these the paint seems to be very successful, especially when the lesions are on the arms, hands, and feet.

Epidermophytic pompholyx.—The deep, tense vesicles should be opened and then the paint applied frequently all over the affected region, usually the fingers and palms of the hands. In this type of epidermophytosis the paint does not answer so well as in the pure eczematous type. In certain cases it is of advantage—provided there are no moist eczematoid lesions associated with the pompholyx—to apply frequently for two days before starting the fuchsin treatment a lotion containing menthol or thymol grs. ii.–v., ac. salicylici grs. xxx.–℈i., resorcin grs. xv.–xxx., spir. rect. ℥ii.–iv., aq. dest. ad ℥vi.

Post-epidermophytosis pruritus.—In previous publications I have called attention to the occurrence of post-epidermophytosis pruritus—viz., cases in which after the usual routine treatment all the objective symptoms of epidermophytosis disappear but the pruritus remains for weeks and months. The pruritus may be of different origin: (*a*) although the clinical signs have disappeared the mycotic infection is still present; (*b*) over-treatment and mild hypersensitivity to the various antimycotic ointments; (*c*) nervous origin; in some highly strung individuals the pruritus remains long after the infection has disappeared. In the first group of cases the application of the carbol-fuchsin paint will be found useful.

Conclusion.

A paint consisting of carbol-fuchsin 100 c.cm., boric acid 1 g., acetone 5 c.cm., resorcin 10 g., gives very satisfactory results in the treatment of epidermophytosis of the toes (mango toe), both in the acute type and chronic type with presence or absence of secondary bacterial infections. It is useful also in certain other forms of epidermophytosis, especially in cases showing signs of moist eczematous dermatitis; the very cases in which salves are contraindicated as in such cases, as a rule, they increase the inflammatory symptoms. With regard to ordinary dhobie itch (tinea cruris, tinea inguinalis) the paint acts well, but the routine treatment by Whitfield's salicylic-benzoic ointment or my old salicylic-sulphur ointment is much simpler and to be preferred.

A disadvantage of using the paint is the deep red colouring of the skin, but patients who have suffered from epidermophytosis interdigitalis pedum for years and have tried all sorts of treatment do not object to it. So far I have not come across—among over a hundred patients—a single case of hypersensitiveness to the paint, but no doubt if this method of treatment should become generalised, such hypersensitive individuals will be found, and therefore at first the paint should be applied with care and in small amount.

Reference.—Castellani: Gehrmann Lectures on Fungi and Fungal Diseases, delivered before the University of Illinois, Chicago, 1926, and published in the Archives of Dermatology and Syphilology, October, November, December, 1927; January, February, and March, 1928.

CULTIVATION OF VACCINIA VIRUS WITHOUT TISSUE CULTURE.

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THE set of experiments which form the subject of this note was made during the course of systematic investigations on the cultivation of filterable viruses. Indications had been obtained that it would be desirable to determine whether the virus of vaccinia would multiply under the conditions of culture to be described.

Technique.

Commercial vaccine lymph was inoculated into the testes of an adult rabbit. After four days the testes were markedly swollen and hæmorrhagic. They were removed and ground in sand and m/50 phosphate, pH 7·6. The mixture was centrifugalised and the supernatant fluid (about 5 c.cm.) was used for the primary inoculum. It was free from bacteria as tested by aerobic broth culture.

Titrations were made by inoculating 0·2 c.cm. of a series of dilutions intradermally into the skin of the back of adult rabbits. The diluting fluid throughout was m/50 phosphate pH 7·6.

The method of preparing and testing cultures was as follows. Blood was withdrawn from a hen and after it had clotted the serum was collected. The hen was killed with chloroform and ether, and the kidneys, which were removed aseptically, were minced finely with scissors. Into a flask was put 0·66 c.cm. (approximately) of minced kidney and 1·33 c.cm. of inoculum diluted 1 in 6·6 with Tyrode's solution. The mixture was allowed to stand in the cold room for four hours. Then were added 12 c.cm. of Tyrode's

olution and 6 c.cm. of hen's serum. The final dilution of he inoculum was thus 1 in 100. The mixture was distributed n amounts of 2 c.cm. into Carrel's tissue culture flasks,[1] ype D, which were incubated aerobically at 37° C., without aps. The cultures were tested after various periods of ncubation by grinding the whole of the contents of each ask with sand and centrifugalising. The supernatant fluid as controlled for the presence of bacteria by aerobic broth ulture and titrated as outlined above.

Experimental.

Expt. 1. Titration of the Primary Inoculum.—The rst titration was made at the time the inoculum as prepared. The highest dilution tested, 1 in 500, roduced a lesion. A second titration, made after he inoculum had been stored in the ice-chest for en days, resulted in a dilution of 1 in 2500 producing lesion. A dilution of 1 in 12,500 caused no reaction.

Expt. 2. First Series of Cultures of Virus.—After orage for six days in the cold room the primary noculum was used for the first series of cultures. The tre of the inoculum was 1 in 2500 (Expt. 1), and its ilution in these cultures was 1 in 100. Cultures were trated in duplicate. The results are summarised elow.

After incubation for 1 day, 1 in 125 pos.*
" " 3 days, 1 in 625 pos.*
" " 5 " 1 in 625 pos.*
" " 7 " 1 in 3125 pos.*

(Pos. = vaccinia lesion. Neg. = no vaccinia lesion.)
* Highest dilution tested.

Expt. 3. Second Series of Cultures of Virus.—The oculum for this series was the supernatant fluid om a culture of Expt. 2 which had been incubated r five days. It was free from bacteria as tested by erobic culture in broth, and had been in the cold om for four days before it was used for this experi- ent. The dilution of the inoculum in these cultures as 1 in 100. Cultures were titrated in duplicate.

After incubation for 1 day, 1 in 5 pos., 1 in 25 neg.
" " 5 days, 1 in 625 pos.*
" " 8 days, 1 in 625 pos.*

* Highest dilution tested.

A dilution of 1 in 625 in this series represented a lution of 1 in 625×10^4 of the primary inoculum.

Expt. 4. Third Series of Cultures of Virus.—The oculum was the supernatant fluid of a five-day ulture from Expt. 3. It had been in the cold room r two days, was free from bacteria as tested by robic culture in broth, and was diluted 1 in 100 in tting up the cultures. Cultures were again titrated duplicate.

After incubation for 1 day, 1 in 5 pos., 1 in 25 neg.
" " 5 days, 1 in 625 pos.*
" " 8 days, 1 in 625 pos.*

* Highest dilution tested.

A dilution of 1 in 625 in this series represented a lution of 1 in 625×10^6 of the primary inoculum.

Expt. 5. Fourth Series of Cultures of Virus.—The oculum was the supernatant fluid of an eight-day lture from Expt. 4. It was not stored before use d was diluted 1 in 100 in setting up the cultures. ltures were titrated in duplicate.

After incubation for 1 day, 1 in 25 pos., 1 in 125 neg.
" " 5 days, (*a*) 1 in 125 pos., 1 in 625 neg.
" " 5 days, (*b*) 1 in 625 pos.*

* Highest dilution tested.

A dilution of 1 in 625 in this series represented a lution of 1 in 625×10^8 of the primary inoculum. cept for the five-day cultures in this experiment the sults of titrating duplicate cultures were identical roughout. The supernatant fluid from the five-day ltures was free from bacteria as tested by aerobic oth cultures.

[1] Carrel, A.: Jour. Exper. Med., 1923, xxxviii., 407.

Expt. 6. Neutralisation of Primary Inoculum, Virus from Third and Fourth Series of Cultures and Lymph from Government Laboratory by Anti-vaccinia Serum.—Neutralisation experiments were made with anti-vaccinia rabbit serum. Virus was diluted with Tyrode's solution and divided into two parts. To one part an equal volume of Tyrode's solution was added and to the other an equal volume of anti-vaccinia serum. After the mixtures had stood for two hours at room temperature, 0·2 c.cm. of each was inoculated intradermally into the skin of a rabbit. The viruses tested and the final dilutions were as follows: (*a*) primary inoculum 1 in 50; (*b*) Government lymph 1 in 50; (*c*) supernatant fluid from an eight-day culture, Expt. 4, 1 in 5; (*d*) supernatant fluid from a five-day culture (*a*) Expt. 5, 1 in 5.

In each instance the virus in Tyrode's solution produced a lesion and no lesion resulted from the virus with serum.

Expt. 7. Had the Medium alone after Incubation an Adjuvant Effect on Infectivity of Virus?—Cultures were made as described except that they contained no inoculum. After they had been incubated for six days at 37° C. the contents of the flasks were put into a mortar and primary inoculum was added, so that it became diluted 1 in 100. The mixture was then treated as a culture—i.e., it was ground in sand and centrifugalised. The supernatant fluid was titrated and compared with the titration of corresponding dilutions of the primary inoculum in Tyrode's solution. The titrations produced identical results. In each instance a dilution of the primary inoculum of 1 in 2500 caused a lesion; a dilution of 1 in 12,500 did not.

Discussion.

During four successive cultures vaccinia virus has increased approximately 25×10^6 times. There was also evidence of increase in comparing the titrations of cultures after incubation for one day and after incubation for five to eight days in Expts. 2, 3, 4, and 5. The experiments were not carried beyond the fourth series of cultures.

In comparing the results of this technique with the growth of vaccinia virus in tissue cultures it is of interest to note the uniformity of results obtained. Whereas only a varying proportion of tissue cultures give evidence of multiplication of the virus, we were impressed by the regularity of the results of titration of cultures in duplicate after incubation for from five to eight days, and also by the similarity of results in successive experiments.

In these cultures we were not able to detect any tissue growth; after 24 hours the small pieces of kidney had begun to disintegrate, and by the third day autolysis of the tissue was extensive.

We wish to express our thanks to Prof. J. C. G. Ledingham, F.R.S., who kindly provided the anti-vaccinia serum, and to Dr. F. R. Blaxall, who supplied some Government lymph.

VICTORIA INFIRMARY, NEWCASTLE-ON-TYNE.—The report of the work of this hospital for 1927 contains some remarkable figures. Since 1907 the number of in-patients has increased from 6445 to 13,806, of new out-patients from 32,444 to 130,352, of out-patient attendances from 93,244 to 383,464; operations last year numbered 14,523 as compared with 5678 in 1907. The waiting-list has been periodically reviewed, yet it still contained 1840 names. The abnormal growth in out-patients' attendances is causing the house committee to inquire into the possibility of curtailing some part of the work. The number of motor accident cases has increased by 138 to 1124, and the 572 beds available were inadequate throughout the year. At the end of the present month the infirmary will come into possession of the adjoining premises, until now occupied as an orthopædic hospital by the Ministry of Pensions, and the honorary medical and surgical staff have outlined a scheme for the adaptation of part of the premises as paying wards, but no decision has been reached. Meanwhile the appeal for £150,000 for extensions made last year is being pressed forward.

Clinical and Laboratory Notes.

A CASE OF GLIOSARCOMA OF THE RETINA IN A CHILD OF THREE.

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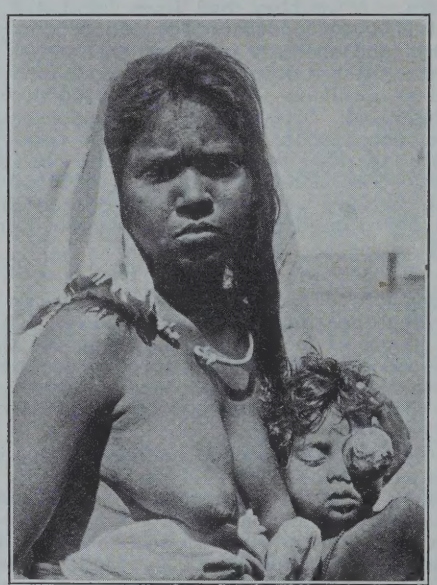
In the following somewhat rare case the patient was carried a distance of 30 miles, probably on foot, by the parents, from whom the history was elicited with difficulty as they were very ignorant and poor villagers.

A Hindu (Bengali) female child, aged 3, was first seen on March 17th, 1928. She had been born normal with perfect eyes, and there was no history of any injury. Four months



Child, front view. Note intact but over-stretched margin of eyelids formed into a ring. Note also two large circular fungating ulcers. The mother with plenty of milk was still suckling her only child at 3 years.

before admission her eyes had begun to "water"; then the left eye became red and, later, cloudy. The left eye was said first to have retracted for about a month; then it began to bulge.

When brought to hospital the child was so irritable that gr. 1/12th morphia had to be given hypodermically before examination, but the tumour did not seem particularly painful. The left eye was found to have been completely destroyed by an ulcerating tumour, the size of a lemon, protruding from the orbit and evaginating the palpebral conjunctiva. The eyelids were intact but greatly stretched. The tumour was firm and fleshy with a feeling of resilience. The child was otherwise normal and in fair condition (feeding on rice, &c., and still suckling from its mother). The right eye was sound and there were no signs of any secondary deposits elsewhere in the body, glands or otherwise.

Treatment.—Complete exenteration of the orbit, as far as possible in one piece, was performed under a general anæsthetic (A.C.E. and ether) on March 22nd. It was a difficult operation on account of tension of the orbital contents and the advisability of removal in one piece intact. The external canthus was slit to give greater freedom for extraction. No operating gloves were used. During the removal a cystic portion burst and a semi-fluid exuded in the form of soft, lumpy, glial contents of a crushed blackberry colour, suggesting degenerating tissue stained by blood. This came from the upper and medial quadrant of the tumour, slightly decreasing its volume and so facilitating extraction. The greater portion of the tumour was fairly firm. There was no invasion of the orbit and the periosteum was stripped clean everywhere up to the margin. growth appeared to have extended backwards along optic nerve to the base of the brain through the op foramen, as the optic nerve was somewhat pulpy. nerve was cut through as far back as possible. There little bleeding of the stump, and this was controlled by saline flush and pressure pad, as artery forceps proved little value. The redundant over-stretched eyelids w then trimmed and the cilial margins cut away. The or was packed with gauze soaked in acriflavine and liq paraffin mixture.

The child had a reactionary post-operative temperat of 101° F. the same evening, which had dropped to nor the next day, rising again to 100° F. on the third day, thereafter normal until an incidental attack of dysent set in and passed off after treatment.

The first dressing was carried out under general anæsthe on the third day, when the stump of the optic nerve w cauterised with pure carbolic acid and a ribbon ga dressing of acriflavine and paraffin repeated. Thenceforw similar daily dressings of very light packing after irrigat with electrolytic chlorine were carried out for about 14 da when acriflavine and paraffin were discontinued.

The child made much better progress than w expected considering the primitive aseptic a antiseptic conditions in a new hospital in the jun 22 miles from the railway. The parents, agai medical advice, took the child away 31 days after t operation, before the wound was healed or a sl graft had been attempted. Nothing has been hea since.

THE COOKING OF LIVER FOR THE TREATMENT OF PERNICIOUS ANÆMIA.

By C. E. Pollock, M.R.C.S. Eng.,
MAJOR-GENERAL, LATE A.M.S.

Liver as usually cooked soon palls. Being mys an involuntary member of the "honourable co pany of liverers," and not relishing the prospect having to eat the same preparation of liver four five days a week, I set to work to find ways of co verting our mainstay of life into an attractive it on the menu. I give the results obtained up to t present, and with further experience I hope to a to the list.

When cooking liver the following general ru should be observed:—

(*a*) Fresh ox liver is more effective than calf liver.

(*b*) The cooking should be short, and the temperat should be kept as low as possible—just sufficient to m the liver seem to have been cooked.

(*c*) No more fat should be used than is actually necess for each dish.

(*d*) Grilling makes the liver tough.

(*e*) Only a little salt should be used in the cooking; m can be added when it is eaten.

(*f*) Any sweet flavouring, such as chutney, should be u sparingly.

Some Recipes.

Liver Sandwiches.—The following has been successfu used by friends for a child. Put the raw liver throug mincer and remove any fibrous parts. Spread the min liver on thinly cut slices of bread and butter, or a piece toast which has been split in two. In either case use li or no butter. Add pepper and salt according to ta sprinkle it freely with fresh lemon juice, and a trace grated onion. A few dabs of Bovril, or a thin layer grated cooked ham improves the flavour. Finely chop pickles may be used in place of ham.

Fried Liver.—Cut the liver into rather thin slices. a small quantity of butter, margarine, or a slice of not v fat bacon into the frying-pan and heat to low frying te perature. Cook gently for five to ten minutes to suit individual's taste.

Dry Curry.—Slice the liver as above. Put into frying-pan a little butter and a dessert spoonful of chut with a squeeze of lemon juice. Heat this while stirrin to a low frying temperature. Roll the slices of liver in curry powder and place them in the pan. Cook gently five to ten minutes.

Liver Purées.—(*a*) Prepare a white sauce. Stir in 6 of grated raw carrot, if it is coarse, or, if young carrots

btainable, the same quantity finely chopped. Boil gently or a few minutes. Stir in the minced raw liver and let stand for three minutes on the warm top of the stove, way from the flame.

(*b*) Prepare a brown gravy, using as little fatty substance s possible. Bring this to the boil, then move the pan way from the flame, and stir in the minced raw liver. et it stand for three to five minutes. Green peas or finely iced young carrots improve the flavour. Serve on toast.

(*c*) Prepare a breakfast-cupful of Bovril or Marmite. ring it to the boil, stir in the minced liver, and let it stand or a couple of minutes on the top of the hot stove. This very useful when the liver is required at short notice.

Liver Soups.—Prepare a breakfast-cupful of any of the llowing soups: tomato, veal broth, chicken, or rabbit roth. Many others, such as potato soup, game soup, ilk and celery soup, make a pleasant variation. Bring e soup up to the boil. Take the pan off the fire, stir in e minced raw liver, and let it stand for a few minutes.

Minced Liver on Toast.—Prepare a tasty gravy flavoured ith a sauce such as A.1 or Harvey's. Chop the liver and ook gently in the gravy for three minutes, spread it on the ast, and serve hot.

Liver and Eggs.—Minced raw liver may be beaten up ith milk and eggs and served as scrambled eggs. An nelette may be filled with minced liver cooked slightly a tasty gravy.

Liver Roll.—Mince together 12 oz. of liver, 6 oz. of beef referably steak), and 6 oz. of rather lean bacon. Add a ace of finely chopped onion. Mix a teacupful of bread-umbs with the minced liver and bacon. Beat up one egg d stir it into the liver mixture, flavouring the whole with little tomato sauce. Wrap it in grease-proof paper, and ok in a steamer from one to one and a half hours. Let get cold and eat it as a sandwich, or in place of cold eat. This is a useful preparation when travelling.

Risotto.—Boil some rice in the ordinary way. Cut the er into dice of about half an inch, and cook in a savoury uce, tomato for preference. Place the cooked rice in a t dish, making a hollow in the middle. Put the liver to this. If preferred, the liver may be sprinkled with non juice and lightly fried. In this case a well-flavoured uce should be served to pour over the rice. Cooked acaroni may be used in place of rice.

Stuffed Potatoes.—Bake or boil two large potatoes in their ins. When cooked cut off the upper third. Scoop out e-third of the potato. Into the space thus formed put inced liver, previously cooked in brown gravy and well asoned with ketchup and lemon juice. Mash the removed tato, and use some of it to form a cap to the liver. Place thin slice of bacon over the top, and put them into a hot en for three minutes.

Chicken and Liver Fricassee.—Minced liver mixes well th chicken fricassee prepared in the ordinary way.

Toad-in-the-Hole.—Liver may be used in this dish in place beef. When making the batter stir in a teaspoonful of tchup. Cold cooked liver and potato salad made with yonnaise is excellent for an occasional change, but ntains too much oil to be used frequently.

With experience other recipes will suggest themves to the interested cook, and the anæmic brother ll bless her ingenuity.

A CASE OF MULTIPLE COMPOUND FRACTURE OF THE SKULL, WITH RECOVERY.

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In his village of Sandawe a man had a quarrel h his wife; on the pretence of cutting wood, he k her out into the bush, and there attempted tally to murder her. The woman was brought o hospital with six wounds on her head, five of ich were complete compound fractures of the lt of the skull; at first appearance the head med almost severed from her body, the injuries re three days old, the head wrapped in a filthy od-stained native cloth, was covered with mud, t several muscles and torn scalp sloughing, and a eral septic state prevailed. Under these conions the prognosis seemed hopeless; nevertheless the patient did live, and attended the court three months subsequently. Besides a scalp wound 3 in. long and reaching to the bone, there were five complete compound fractures of the vault of the skull; these wounds were inflicted by a panga. The fractures were: one left temporal, one frontal, one right parietal, one left parietal, and one fracture of occipital bone 5 in. long, and 1½ in. gap; all these fractures communicated with the surface of the brain, and in all cases the cerebral meninges were exposed. It would seem almost miraculous, considering the anatomical relations of the middle meningeal artery, especially its anterior branch, also the temporals externally, that these vessels could have escaped rupture with ensuing fatal hæmorrhage.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

The following are some of the 1927 statistics of five English, one Welsh, and two Scottish counties :—

Name of county and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality from childbirth.
Surrey .. .. (792,300)	14·2	10·7	0·71	1·81	2·0	1·6	46	2·0	3·0
Warwickshire .. (377,900)	17·3	11·2	0·76	1·36	2·1	1·5	66	3·8	2·9
East Sussex .. (268,200)	12·6	12·4	0·67	1·66	2·0	2·3	44	1·8	5·0
Northamptonshire (215,000)	14·4	11·8	0·89	1·48	2·2	1·9	51	1·9	5·1
Cumberland .. (216,130)	17·2	13·6	0·85	1·40	2·8	2·0	81	6·7	5·4
Breconshire .. (61,150)	16·7	12·8	0·98	1·04	2·8	2·0	79	5·8	7·8
Aberdeen* .. (107,224)	21·2	13·4	0·83	1·55	2·1	2·0	73†	3·9	3·9
Fife* .. .. (110,689)	19·2	11·8	0·60	1·11	2·4	1·3	86	4·2	7·5

* Extra burghal or landward area. † Including the burghs, except Peterhead and Fraserburgh.

Surrey.

Dr. T. Ruddock West, deputy M.O.H., describes the continued attention given to the river Wandle. The rapid building up of the districts in this valley has given rise to engineering and legal problems owing to the sudden increases in the volume of the river after the fall of rain on the much larger proportion of impermeable surface. As the swollen river subsides the oil is deposited and gives rise to offensive smell and unsightly conditions. The Carshalton section of the river, which was subject to much chemical pollution, is now free from pollution from trade wastes and sewage, while the stretch of the river from the female orphanage to Beddington Park has been cleaned and the velocity of the stream much improved. During the year there were 149 notifications of puerperal fever and pyrexia with six applications for a second opinion and eight for admission to hospital. It is thought that the facilities provided will be more used when the scheme becomes widely known. The number of cases admitted to maternity homes under the Council's scheme shows a steady increase. Thus the admissions during the last five years were 44, 54, 104, 160, and 183.

The whole-time chief veterinary officer appointed by the council took up his duties in July. Pending

arrangements for the periodical inspection of all dairy herds notifications of milk containing tubercle bacilli or streptococci of bovine mastitis are investigated. It is frequently found that although the notifications received may refer to only one farm, the sample contains other milk purchased by the vending farmer. As the result of 11 "outside" notifications of tuberculous milk four animals were dealt with under the Order, and of five others suffering from tubercle four were slaughtered by the owners and one died during the investigation. In seven cases no confirmatory evidence by microscopical and biological tests of tuberculous infection was obtained. In the case of the four milk samples containing streptococci four animals were discovered suffering from mastitis, and the owners' attention was drawn to the fact that it was an offence to sell such milk.

The number of blind persons on the register is gradually increasing. At the end of 1924 there were 523 and at the end of 1927, 744. The council subscribe £100 per annum to the National Library for the Blind and in return the library supplies books and music to blind persons in Surrey. The school report shows that the parents of 219 children objected to routine medical inspection. In 40 cases the objection was withdrawn after explanation and in 46 the inspection schedule was completed by a private practitioner. The school nurses also act as health and tuberculosis visitors. The cost of installing drinking fountains of special type to take the place of the drinking vessels (mostly enamelled iron mugs) used in common by the scholars is considered by the council to be prohibitive. Great success is claimed for the system instituted in June, 1925, by which contacts of certain infectious diseases remain at school under the supervision of the school nurse instead of being excluded. Owing to the epidemic of influenza which swept the county during January and February the number of days of school closure compares unfavourably with the previous year. In the case of several schools, after meetings of the parents at which the procedure was explained, immunisation of children against diphtheria has been practised. Nearly 1000 children have been immunised. There are now within the county 73 minor ailment, 31 dental, and 27 eye clinics. When one more additional dental surgeon has been appointed in 1928 dental treatment will be available for the school-children at every age. Under the orthopædic scheme, which included seven centres, 729 children received 12,222 treatments.

Warwickshire.

Dr. A. Hamilton Wood reports that after an absence from the county since July, 1925, small-pox appeared in epidemic form during the last quarter. There were 55 cases notified chiefly in Nuneaton, Foleshill, and the Atherstone and Coventry rural districts. At the time of writing the report the disease was under control. The outbreak, says Dr. Wood, would have been even more limited if the offer of vaccination had been generally accepted. The disease was usually of a mild type, but in some cases led to disfigurement. There was an outbreak of enteric fever causing 22 cases in Southam. The source of the outbreak was a well contaminated with sewage, as evidenced by bacteriological examination and the discovery of leakage from a drain. There were 12 notifications of encephalitis lethargica in the urban and 12 in the rural districts and 16 deaths.

Some improvement is reported as to river pollution. The condition of the Tame is likely to be improved by the efforts of the Upper Tame Joint Committee and the extension of the bio-aeration process at the Birmingham Tame and Rea works. The pollution by paper mills is to be reduced by the introduction of machinery which will extract fibre from the residue, to be used again instead of its being discharged as waste. The state of the Avon is improved by better treatment at the Rugby works. Coventry, which is in a difficult position, owing to the fact that the volume of the effluent in dry weather is equal to that of the river, is contemplating new works at an estimated cost of £226,000. It is thought that the ten mile stretch of the river between Baginton and Warwick may, as the result of these schemes, become once more capable of maintaining fish life. The policy of the county council is to investigate all cases of tuberculous milk reported from outside, and in addition to take 100 bulk samples. There were 31 outside notifications which resulted in 12 cows being slaughtered under the Tuberculosis Order. Of 85 bulk samples examined biologically three were found to be tubercle-infected. During the year about 2000 swabs were examined from diphtheria cases and contacts, but only five virulence tests were carried out. It is thought that a full advantage will be taken of the virulence test in future when its extreme usefulness is appreciated.

The orthopædic scheme comprises five clinics, but another clinic is required in the north of the county to complete the scheme. Of 52 cases of puerperal fever and pyrexia a second opinion was asked for in six cases, and 12 cases were removed to hospital. In the case is treated at home the nurse-midwife takes charge and is compensated for the loss which she incurs by handing over her normal cases to other midwives. The higher death-rate and infant mortality as compared with the previous year was accounted for by the influenza epidemic, which was responsible for 211 deaths as against 85 in 1926.

East Sussex.

Dr. A. G. R. Foulerton gives the result of following up tuberculous milk samples notified by outside authorities from Sept. 1st, 1925, to Dec. 31st, 1927. During these 28 months the notifications numbered 31, and as a result 34 farms were inspected and 14 cows dealt with under the Tuberculosis Order. A table shows the average infant mortality in the county for the four years 1924–27 as 44·7 and the figures for the three preceding six-year periods as 80·2, 70·9, and 53·8. During the same four periods the infant mortality for England and Wales was 119, 100·8, 82·5, and 72·2. The deaths from tuberculosis during the year numbered 181 and the number of cases on the revised register is 1027. In April, 1928, there were only four parishes, with a total population of 1463, without the services of a district nurse. At the end of the year there were 25 registered maternity homes in the county. Dr. J. R. Dingley, the medical superintendent, reports that an orthopædic visiting surgeon has been appointed for Darvell Hall Sanatorium. Dr. Dingley is impressed with the satisfactory results obtained by artificial pneumothorax in suitable cases, and favours its more extensive use for early cases. Occasionally he finds sanocrysin of benefit. In furtherance of the scheme for occupational therapy a workshop has been equipped for the patients and is in the charge of a skilled joiner, an ex-patient.

Northamptonshire.

Dr. L. Meredith Davies reports an epidemic of influenza between the third week in January and the first week in March, during which time 139 school departments were closed for varying periods. A somewhat excessive prevalence of paratyphoid fever chiefly in the Kettering neighbourhood, during the latter half of the year was exhaustively investigated and was thought to be associated with a carrier employed at a large bakery. One case of small-pox was imported from Durham. The occupations followed by the new cases of tuberculosis do not suggest that the incidence of tuberculosis in the boot and shoe industry is unduly high. Artificial light treatment at the Wellingborough dispensary appears to give the best results in the case of tuberculous glands with discharging sinuses and is somewhat less beneficial for lupus, while its value for pulmonary disease is doubtful. Dr. Davies discusses the failure to get early cases of phthisis under treatment and is inclined to favour the establishment of preventoria as in Germany and America, the adoption of the "Grancher" system, and the more extensive use of open-air schools, both day and residential. The notifications of ophthalmia neonatorum numbered

8, of which 23 were treated at home and 5 in hospital, ıcluding 2 babies born in the hospital. One case of ɔtal blindness resulted, but the circumstances of this ıse are not given.

The orthopædic scheme now comprises five clinics ased on the Manfield Hospital. The 14 notified cases f puerperal fever were investigated. Ten of the cases ere treated in hospital and special nurses were ovided for two. Particulars are also given of the 7 notified cases of puerperal pyrexia, 7 of which were eated in hospital, and for 3 of which special nurses ere provided. There were no applications from ractitioners for antistreptococcal serum or for acteriological examinations. Nine complaints of ıberculous milk were received from the L.C.C., but ıly two infected cows were discovered and dealt with ıder the Order. In several districts veterinary spection is in force. Fifteen tuberculous cows were scovered by the Kettering inspector, of which two ere not in milk and in three the disease was "not dvanced." All 15 were dealt with under the Order. our tuberculous cows were found by inspection in the ellingborough district, one in Oundle, and none in the her five districts.

Cumberland.

Dr. F. H. Morison states that many of the recom-endations for improvements and extensions made in ıe years 1924 and 1925 have been carried out. As gards future developments, he recommends two hich will not be expensive. The first is a subsidised ɔd for children at the Cumberland Infirmary, which ight be used for operations for rupture, squint and ɾe conditions, skin diseases, and for observation in ɔscure cases. The second is the provision of a ıcteriological laboratory in the county, which would ɔt be an additional expense but take the place of boratory work now done for the county in Manchester ıd London. Other more costly needs which he esses are: 1. The appointment of a woman edical officer to coördinate maternity and child elfare work, to enable new centres to be opened, and develop antenatal work among expectant mothers. Additions to the dental staff. At present there is ıly one dental surgeon and one nurse, and half of the hool-children receive no dental treatment at all. order to provide an efficient dental scheme five ntal officers and five nurses would be required, but e appointment of a second dental officer and nurse ɔuld at least enable urgent cases all over the county receive prompt attention. 3. The provision of an en-air school, or at least the retention of beds in ch a school, or in a seaside convalescent home. Provision for the isolation of advanced cases of lmonary tuberculosis and of beds for observation rposes. 5. The establishment of some such scheme the Grancher system for child contacts of open berculosis. 6. The establishment of clinics and spensaries at Arlecdon, Frizington, and Aspatria, d the provision of clinic treatment, perhaps by a ravan, for a large part of the east of the county. . Morison also presses for the energetic operation of e Housing (Rural Workers) Act of 1926 by the full operation of the county council with the local thorities.

Breconshire.

Dr. Herbert Davies records an epidemic of small-pox the Brynmawr district. The first case was notified the beginning of May, and 59 cases were notified ring the year with no deaths. The epidemic was re severe in Monmouthshire and Glamorganshire. e county council subsidise the district nursing ociations and in return the nurses, who also act midwives, perform the duties of school nurse and lth visitor. A scheme is in force whereby midwives ending cases more than three miles from their me are paid an allowance of 3*d.* per mile after the t three miles for each day of their attendance, but payments were made under this scheme during the r. As in most districts the death-rate from piratory diseases in 1927 was increased by the valence of influenza.

Aberdeen.

Dr. Harry J. Rae reports that the scheme begun in 1925 for the immunisation of children against diphtheria and scarlet fever has been continued with vigour. Up to the end of February about one-third of the school population, 8500 children, had been tested and 7000 of them actively immunised. As regards results, during the period mentioned 1333 cases of scarlet fever were notified. The cases notified included 21 of the tested children, in 7 of whom the disease appeared within a month of the last inoculation, while four others were discharged from hospital as not having had scarlet fever. The net result, therefore, was 10 mild cases of scarlet fever among the 7000 immunised children. During the same period 257 cases of diphtheria were notified, only two of whom had received preventive inoculations. Two separate outbreaks of milk-borne paratyphoid fever occurred, both in the Deer district. The first began in the end of May and caused about 32 cases in the burgh of Peterhead. The mother of the family, which carried out the work of the dairy farm, was found to be a carrier. The husband made application for compensation owing to loss of his work. The authorities did not think compensation could be legally made under Section 164 of the Public Health (Scotland) Act, 1897. The claim was ultimately settled by finding employment for the man under the road surveyor of the Deer district. In this outbreak the evidence pointed to the fact that the milk was infected on one occasion only. The second outbreak, also of paratyphoid B, occurred in November. The actual carrier in this case was not clearly demonstrated, and the milk appeared to have been infected on one or, at most, on two occasions.

There were 346 notifications of pneumonia. Institutional treatment is encouraged, and there is plenty of accommodation at the city hospital or at Woodend hospital. Removal is recommended up to the fourth day provided the patient's condition is good and there is no cardiac embarrassment. Many practitioners in the county favour domiciliary treatment, one objection to which is that the patients return to work too soon. In eight cases special nurses were supplied through the health department. Dr. Rae thinks that the extensive adoption of the Housing (Rural Workers) Act would do more to meet the housing shortage in the county than any preceding housing Act, and points out that this Act applies to burghal areas and to the dwellings of persons other than agricultural labourers. Routine inspection by the county veterinary inspector discovered 69 suspect cows, of which ten had tuberculosis of the udder.

Fife.

Dr. G. Pratt Yule draws attention to the steady decline, year by year, of both the deaths from and the notifications of tuberculosis. The tuberculosis officer, Dr. G. McGillivray, thinks that the risk of case-to-case infection in a family has been greatly lessened by education. Most of the cases in Fife come from one- and two-roomed houses. Nevertheless, out of 241 new cases of tubercle in 1927 only 14 were contacts. In 36 others some kind of a family history of tuberculosis was obtained, but none of "living in contact." In 191 cases there was no family history of tuberculosis. Some years ago the state of affairs was quite different, when windows were seldom opened and no precautions taken with regard to coughing or sneezing and the disposal of sputum. Kirkcaldy is the only one of the four districts which continues to add to its housing programme. Dunfermline has discontinued owing to the state of the coal trade. Cupar and St. Andrews have contented themselves with subsidising private enterprise. All the four districts have adopted approved schemes under the Housing (Rural Workers) Act, but only four applications under this Act were received in 1927. There are nearly 6000 dairy cows in the county, and in 1927, the first completed year of regular inspection, was carried through by the county veterinary surgeon, Mr. R. G. Anderson.

MENTAL HOSPITAL REPORTS.

THE *West Sussex County Mental Hospital, Graylingwell*, near *Chichester*, has had an unusual influx of patients and is now 47 over the statutory accommodation, which is for 800. For the moment the most urgent need is for female beds, but during the last few months the admissions have been chiefly males. Of the 153 admissions 48 were aged 60 or more, and many of them were quite hopeless. Nevertheless there was a recovery-rate of 30·7 per cent. The general health was good, except for a mild epidemic of influenza, two cases of chicken-pox, and three of typhoid. The death-rate was 7·54 per cent. Dances and cinema performances take place weekly and a wireless apparatus is to be installed. Eight nurses and three attendants obtained their M.P.A. certificate during the year. Thirty of the 37 pages of the report are purely statistical.

The *Dorset County Mental Hospital* had 880 patients on the books at the end of the financial year and is considering plans for extension, although this figure shows a small diminution in the number of women patients. The recovery-rate is 48·22 per cent., rising to 68 per cent. if cases "discharged relieved" are included. The death-rate was 6·47 per cent. The general health was very good and the tuberculosis incidence has been halved. Although there are typhoid carriers in the hospital there has been no epidemic sickness of any kind except influenza in the spring. The laboratory has carried out over a thousand routine investigations and has also initiated research into the acetic anhydride or Boltz test and Buscaino's silver nitrate reaction. A "leucocytic survey" was made of all patients towards the end of the year, with a view to detecting focal sepsis. Acetonuria was found to have no significance in mental disease. Of 13 cases of general paralysis treated with tryparsamide, three have gone back to work, three are much improved, and four have died. Seven showed much mental inprovement. Occupational therapy is a new departure in this hospital and is already producing most excellent results; the department is self-supporting, for the handicraft work finds a ready sale. The out-patient clinic is held weekly at the Dorset County Hospital. A solarium for the men patients has been completed and various other alterations have been carried out in order to bring the hospital up to modern standards. The operating theatre is now in use. Patients are allowed to wear their own clothes and two wards on each side have open doors. Seventy-seven men and 14 women have full parole. Eight more nurses obtained the M.P.A. certificate during the year, and it is interesting to note that 28 members of the staff have more than 21 years' service to their credit.

The *Devon County Mental Hospital* records, in an illustrated report, a year of activity among its 1211 patients. To relieve congestion, 41 chronic harmless patients were removed to the care of local authorities. The recovery-rate was 36·65 per cent., but the figure for the private patients alone was 47 per cent., The death-rate was 9 per cent., the cause being verified by autopsy in 67·8 per cent. of cases. There has been a steady increase in the routine work of the laboratory, and 1860 investigations are listed. Blood films of patients who have had ultra-violet light treatment are being investigated. The consulting surgeon performed 21 operations and the dental surgeon examined 453 patients, including all new admissions. The ophthalmic surgeon saw 60 patients and prescribed glasses for 36. Definite benefit is being obtained from the ultra-violet ray installation. Five men with general paralysis were treated by induced malaria and three of them were discharged; one became worse. The out-patient clinic in Exeter treated 34 patients during the year. The new fruit garden supplied patients with 640 lb. of raspberries. Eighty-nine patients have had daily parole within the estate and 57 more have been allowed into the village and on walks. There has been no abuse of the privileges. The Hospital Fire Brigade won a prize at the National Fire Brigades' Association demonstration at Exmouth. The list of entertainments for patients occupies three and a half pages of small type; 15 of the 25 cricket matches were won by the hospital eleven. The handicrafts occupy a very large number of patients. Every effort is made to impress on probationer nurses that they come to the hospital to be taught and must go through a course of training and examinations just as general nurses do; 31·8 per cent. now have their M.P.A. certificate.

The *Stafford Mental Hospitals Board* houses just over a thousand patients at its Stafford Hospital 943 at Burntwood, and 1134 at Cheddleton.—At *Stafford* the recovery-rate was 40 per cent. and the death-rate 7·62 per cent. The deficiency in sleeping accommodation has been partially relieved by the completion of a new annexe for tuberculous male patients and the use of the Isolation Hospital for men convalescents. A reception hospital is planned. The laboratory research has been hindered by the illness of one of the medical officers, but routine work goes on as usual and investigation has been continued into the usefulness of venom hæmolysis as a means of diagnosis. Patients are sent home on trial and have parole in the grounds, but not beyond. Forty-six male and 10 female nurses are certificated or registered. Ultra-violet ray treatment is giving good results.—At *Burntwood* the recovery-rate was 24·34 per cent. and the death-rate 9·63 per cent. The hospital is overcrowded and there is urgent need for an admission block. There were 88 cases of influenza, three of typhoid fever, and two fatal cases of dysentery, the source of which has been sought in vain. Vita-glass has been fitted in the men's sun room and has proved well worth the expense. Violet ray and continuous bath apparatus are to be provided. Trial and parole are allowed to a number of patients. Forty-nine nurses are certificated or registered.—At *Cheddleton* there is the same overcrowding and there is urgent need for verandahs, X ray apparatus and admission and convalescent blocks. The increase in the number of cases of dementia præcox and general paralysis continues. Malarial treatment for the latter is giving great satisfaction. Fourteen patients died of tuberculosis, although only one could be diagnosed on admission. Dysentery continues to cause anxiety, and careful search has not revealed the source of infection. The medical superintendent speaks trenchantly of the need for more nurses and of the difficulties of work in an out-of-date building with inadequate financial resources. Parole is granted to a number of patients, and three wards are administered on the open-door system. Twenty-six per cent. of the women and 60 per cent. of the men nurses are certificated or registered. The staff includes a visiting orthopædic sister, an electro-therapeutic sister, and a schoolmistress.

The *Joint Counties Mental Hospital* at *Carmarthen* housed 655 patients at the end of 1927, and had a recovery-rate for the year of 27·9 per cent. The death-rate was 11·39 per cent. One baby was born in hospital, and the mother has since recovered. There was a heavy epidemic of influenza in the spring and 21 cases of diarrhœa and 6 of tuberculosis were notified. The dental surgeon visited weekly and examined 200 patients. He found very little caries but a good deal of gum trouble. The hospital lacks a number of facilities for treatment commonly regarded nowadays as indispensable. For instance there is no electric-supply and, consequently, X rays, violet rays, and electric baths are impossible. The water-supply is inadequate, but the sewage has now been connected up with the town drains. The visiting Commissioners complain of the state of the sanitary annexes, of the darkness of the workroom and kitchen, of carelessness in storing poisons, and in keeping clinical records, and of the absence of verandahs, and of any attempt to keep the patients either employed or amused. They remark: "There

; an excellent pathological laboratory which has not een used for some years. . . . We hope that due egard will be paid . . . to the desirability of appoint- ıg a medical man with some knowledge, experience, nd interest in this field of work."

At the *Glamorgan County Mental Hospital* at *Bridgend* there is overcrowding to the extent of 133 n the male side, and plans have been approved for new reception block and other buildings. There ere 1933 patients in residence at the end of 1927. he recovery-rate for the year was 31·1 per cent., nd the death-rate 8·9 per cent. General paralysis ccounted for most of the deaths, but disease of the eart and blood-vessels came next in order. The ıuse of death was verified by autopsy in 80 out of ıe 172 cases. A baby was born and the mother ecovered. The general health was good, save for ıfluenza and three cases of dysentery. The surgeon as not called on for any major operation, but the ental surgeon saw over 400 patients and performed 108 extractions under local anæsthesia. Seventy atients were sent out on trial, ten with money allow- ıces, and a good deal of parole is allowed on the ıale side, but none on the female. Twenty-one urses gained their M.P.A. certificate during the ear.

The *Monmouthshire Mental Hospital* at *Abergavenny* had 1158 patients at the end of 1927. The ecovery-rate was 36 per cent. and the death-rate 2 per cent.—the lowest ever recorded at this ospital. The rate among the women was as low s 3·9 per cent. This speaks well for the efforts ıade in a hospital which, as a building, lacks many ıodern amenities. Central heating has been installed nd one of the wards on each side is being converted ito an admission ward with an open verandah nd a hydrotherapy room. The general health was ood except for influenza, and the institution is now ee from dysentery. The visiting surgeon performed ıree operations during the year and the dental ırgeon visited weekly. A number of patients have arole, and efforts are made to find occupation for l of them. Three more nurses have obtained their rtificate.

The *Down County Mental Hospital, Downpatrick*, lustrates its report with many photographs of the uildings. There were 756 patients on the books at ıe end of the year. The recovery-rate was 46·2 er cent. and the death-rate 6·9 per cent. There ere 44 vacancies, accommodation having been creased by the new nurses' quarters. The farm ntinues to be a pecuniary asset as well as providing xcellent occupation for the patients, who are mainly awn from an agricultural population. The increase the number of entertainments and recreations ntinues, and the medical staff investigate cases ıoroughly and individually. The more elaborate boratory work is carried out in Belfast and London ; st year an epidemic was averted by the prompt cognition of a "carrier" colitis. More than half ıe patients are usefully employed. About a hundred en go outside the walls every day and as many women ıce a week. The dental surgeon visits weekly, ıd there are physicians and surgeons on the con- ılting staff. Nine more nurses have gained their rtificate, bringing the total to 54.

NFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 8TH, 1928.

Notifications.—The following cases of infectious sease were notified during the week :—Small-pox, 3 (last week, 102) ; scarlet fever, 1790 ; diphtheria, 1 ; enteric fever, 108 (last week, 122) ; pneumonia, 6 ; puerperal fever, 38 ; puerperal pyrexia, 102 ; rebro-spinal fever, 3 ; acute poliomyelitis, 17 ; cephalitis lethargica, 29 ; continued fever, 3 ; rsentery, 8 ; ophthalmia neonatorum, 102. No se of cholera, plague, or typhus fever was notified ıring the week.

The following counties each notified 3 or more cases of enteric fever :—London, 23 ; Devon, 3 ; Essex, 12 (of which Colchester 6) ; Hertford, 3 ; Lancaster, 6 ; Middlesex, 5 ; Southampton, 3 ; Surrey, 6 ; Sussex East, 4 ; Yorks West Riding, 3 ; Denbigh, 3. The total of 108 includes 39 cases of paratyphoid fever, of which 13 were notified in London and 5 in Surrey.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Sept. 11th–12th was as follows :—Small-pox, 9 under treatment, 2 under observation ; scarlet fever, 1552 ; diphtheria, 1444 ; enteric fever, 105 ; measles, 120 ; whooping-cough, 247 ; puerperal fever, 14 (plus 7 babies) ; encephalitis lethargica, 72 ; poliomyelitis, 2 ; "other diseases," 22. At St. Margaret's Hospital there were 17 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 4 (0) from enteric fever, 14 (2) from measles, 5 (0) from scarlet fever, 17 (6) from whooping-cough, 17 (3) from diphtheria, 120 (39) from diarrhœa and enteritis under two years, and 18 (2) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever were reported from Bristol, Stockport, Burnley, Newcastle-on-Tyne, and Tynemouth. Of the 12 fatal cases of measles 3 were reported from Birmingham, Belfast reporting 4 in the same week. There was a large increase in the number of deaths from diarrhœa, of which Liverpool reported 10 ; Birmingham, 9 ; Manchester, Leeds, and Newcastle-on-Tyne 5 each ; and West Ham, 4 ; while Glasgow and Dublin reported 10 and 6 respectively.

The number of stillbirths registered during the week was 263 in the great towns (corresponding to a rate of 89 per 1000 births), including 60 in London.

INFECTIOUS DISEASE IN NORTHERN IRELAND.—According to a return just issued by the General Register Office in Belfast (H.M. Stationery Office, 1s.) the following cases of infectious disease were notified to the Ministry of Home Affairs during the second quarter of 1928—namely :—Enteric fever, 99 (70) ; typhus, 4 (4) ; small-pox, 0 (0) ; scarlet fever, 782 (458) ; diphtheria, 254 (123) ; pneumonia, 50 (2) ; cerebro-spinal meningitis, 3 (3) ; encephalitis lethargica, 1 (1) ; erysipelas, 41 (19) ; tuberculosis, 280 (262) ; measles, 3 (0) ; chicken-pox, 70 (0) ; puerperal fever, 10 (8) ; ophthalmia neonatorum, 4 (4) ; membranous croup, 1 (1). The figures in parentheses are for the County Borough of Belfast. It should be remembered that tuberculosis is not notifiable in many districts, that measles is only notifiable in Bangor, and chicken-pox only in Bangor and a few small districts. The returns for cerebro-spinal meningitis and encephalitis lethargica are also incomplete.

DONATIONS AND BEQUESTS.—Mr. William Horne Cook, Edinburgh, left nearly £3000 to charities, including £1000 to the Royal Edinburgh Hospital for Sick Children, of which he had acted as treasurer, and £500 each to Muirfield Convalescent Home for Sick Children and the Edinburgh Royal Infirmary.—Mr. Robert Hilder, Threshall Priory, Stansted, Essex, and of the London Stock Exchange, left, besides other bequests, £5000 to St. Mary's Hospital, Paddington, as an endowment for five beds in memory of his late wife's brother, Richard Mynors, formerly chief assistant to Sir William Broadbent at that hospital, and £5000 to the Bishops Stortford Hospital.—Mr. James Walker Oxley, retired banker, of Westwood, Headingley, Leeds, left £5000 4 per cent. Preference Stock of the L.M. & S. Railway each to the Leeds Public Dispensary, the Leeds Tradesmen's Benevolent Institution, and the Leeds District Nursing Fund for the Sick Poor.—Miss Ellen Davis, of Highfield Lodge, Lincoln, left £1000 to the Lincoln County Hospital, Lincoln.—Mrs. Caroline Ashley Smith, of Onslow-gardens, South Kensington, left £500 each to the Ramsgate General Hospital and the Princess Louise Hospital for Children, Kensington, W.—Leaving over £47,000, Dr. Alfred Charles Augustus Packman, of Grove House, Rochester, bequeathed the bulk of his estate in trust for his brothers and sisters, and on the death of the survivor of them between the Royal Medical Benevolent Fund and the West Riding of Yorkshire Medical Charity.—Miss Martha Mills, of Nottingham, left, among other bequests, £1000 to the Nottingham General Hospital, for the endowment of a bed in memory of her brother-in-law, Morris Weisblum ; £100 to Dr. Barnardo's Homes ; £50 to the Lord Roberts Memorial Workshops, London ; £50 to St. Dunstan's Institute for Blinded Soldiers and Sailors ; £50 to Ellersley House, Nottingham, Home for Paralysed Soldiers and Sailors ; £50 to Lord Mayor Treloar's Homes for Crippled Children ; and £100 to the Nottingham General Hospital.

Reviews and Notices of Books.

BRAIN AND MIND,

Or the Nervous System of Man. By R. J. A. BERRY, M.D., F.R.C.S., F.R.S. Edin., Dean of the Faculty of Medicine and Professor of Anatomy in the University of Melbourne, &c. New York: The Macmillan Company. 1928. Pp. 608. 31*s.* 6*d.*

THE appearance of Prof. R. J. A. Berry's interesting and provocative book is doubtless a sign of the times; it proceeds logically from the simple to the complex, from structure to function, from the physiological to the psychical; it insists on psychology as a department of biology, on neuronic insufficiency as the necessary antecedent of mental disease. In his opening sentences Prof. Berry indicates his personal standpoint in the clearest fashion: "it is not uncommon to find the human mind spoken of as though it were something which had no physical basis whatever, but was the result of a Psyche or soul, whereas the truth is that all mental phenomena are strictly dependable on physical construction, and that the elementary basis of such construction is always the neuron or nerve cell." Thus is the gauntlet thrown down in challenging fashion; no neuron, no mind, is the author's battle-cry. The reception of this finely written and closely reasoned thesis by the individual reader's mind will no doubt depend on the latter's preconceptions and mental training; he may welcome it as elaborating in a convincing way what he has felt all along to be the only rational manner of envisaging the facts; or, on the other hand, he may remain coldly unimpressed, satisfied that no amount of objective correlation of cerebral structure with psychical manifestation will explain the essential difference of the two orders of things, psychical and physical.

It is well, none the less, that the materialistic viewpoint (the epithet may be used in this connexion without misunderstanding) should be adequately stated, and that the body of evidence which can be advanced in its support should be properly marshalled and duly evaluated. That a professor of anatomy should do this for us cannot surprise those who are acquainted with Prof. Berry's previous work and research; after all, why should he not? No one whose knowledge of intimate neural structure is as profound as his can fail to see that by itself this marvellous complexity is nothing; its meaning, its purpose, its activity, form the fascination never absent from pure morphology. The only material physical distinction between man and the lower animals is that he possesses about three times as many cerebral neurons as does any other animal; and that his increased mentality is solely due to this cause cannot seriously be called in question. On the pathological side, the conclusion is that all the abnormalities of neural function, whether currently they are held to belong to the domain of psychopathology, psychiatry, or neurology, fall into four groups—absence, diminution, perversion, or exaggeration, respectively, of the functions of the three great structural divisions of the central nervous system—viz., receptor, internuncial, and effector neurons.

Straightforward as is Prof. Berry's exposition of his thesis, and impressive as are his numerous illustrations taken from clinical medicine, we should have been glad to have his views on the possible influence of function on structure; assuming that such a process is not only conceivable but on occasion actual, we should have been interested in his explanation of its bearing on his own line of argument. There must surely be interplay between vitalism and structuralism; in an appreciative preface written by Dr. Foster Kennedy, of New York, he insists that nurture is requisite, as well as nature, if the neuron is to flower; and we may recall the dictum of the veteran Prof. von Monakow, that every psychic process presents certainly a physiological effect in t brain, whether we will or not.

THE CLINICAL EXAMINATION OF THE NERVO SYSTEM.

Fourth edition. By G. H. MONRAD-KROH M.D., F.R.C.P., Professor of Medicine in t Royal Frederick University, Oslo, &c. With foreword by T. GRAINGER STEWART, M.I F.R.C.P., Physician to the National Hospit Queen-square, &c. London: H. K. Lewis a Co., Ltd. 1928. Pp. 209. 7*s.* 6*d.*

WE have reviewed Prof. Monrad-Krohn's han book on previous occasions, and compliment author on the appearance of a fourth edition—a su sign of appreciation and of its intrinsic merits. Co paratively little change has been made in the lat edition. Two or three pages on the interpretation X ray photographs of the skull have been add The book contains much useful and practical inform tion in small compass, and deserves to be still m widely known.

THE PRINCIPLES AND PRACTICE OF OBSTETRICS.

Fifth edition. By JOSEPH B. DELEE, A.M., M.I Professor of Obstetrics at the Northweste University Medical School; Obstetrician to t Chicago Lying-in Hospital and Dispensary, a to the Mercy Hospital, &c. London and Ph adelphia: W. B. Saunders Company. 19 Pp. 1140. 55*s.*

THE fourth edition of this well-known text-book obstetrics was published at the end of 1924, and ev in this short space of time extensive alterations ha been found necessary in both text and illustratio The book is very complete and will be of value those who take more than a superficial interest this branch of medicine. The views of Dr. Del on pregnancy and labour are well known in t country. There are probably few who agree w him that more than half the pregnancies which oc in a civilised state are pathological; in spite of t view, however, he does not advocate excessive int ference with the normal course of nature. T scientific side of the subject is dealt with fully, a hundreds of references are given to the vari original papers from which quotations are made. dealing with treatment, the author discusses measures which have from time to time been ad cated, and then describes his own practice. M wifery under adverse conditions does not receive amount of attention that might be expected in book of this size.

In the previous edition Dr. DeLee was full praise for the transperitoneal cervical Cæsarean ope tion, and we are interested to note that his furt experience confirms his original opinion. The ope tion has now been performed at the Chicago Lying Hospital 620 times with six deaths. In 1924 it h been performed 266 times, so that this one hospi alone apparently has to deal with nearly 100 case year which require Cæsarean section. Thirt excellent illustrations show the various stages of operation. Catgut only is used for the uterine sutu In both the classical and the low operation no atten seems to be made to produce a thick scar in uterus; it would be interesting to know how of the scar stretches. In the chapter on place prævia no mention is made of Willett's scalp forc now used with great success in this country. I not easy to discover the author's views on the tre ment of eclampsia. He seems to approve of both operative and the conservative methods un different conditions. If the conservative metho chosen, he advises that labour be terminated as s as possible—i.e., as soon as the cervix is fully dilat "If the head is engaged, forceps; if not, versio chosen." He approves of venesection, but consid eliminative measures to be useless. Chloroform sho

ever be used to produce anæsthesia, and in his pinion ethylene is to be preferred to ether. He nentions that veratrone was recommended for the reatment of eclampsia in 1859, and places this form f treatment in the same category as amputation of he breasts. The chapter on forceps is most informa- ive. In it the evolution of the modern instruments s discussed in detail. Dr. DeLee is not as enthu- iastic as are most continental writers about the alue of the Kjelland forceps.

This book has established itself as one of the eading works on obstetrics in the world. It is too arge for the junior student, but for those engaged in he teaching of midwifery, and for those reading for igher examinations, it is invaluable. We would have referred the weight to be less than five and a quarter ounds, but the illustrations and printing are beyond riticism.

SHORT HISTORY OF MEDICINE.

Introducing Medical Principles to Students and Non-medical Readers. By CHARLES SINGER, M.D., D.Litt., F.R.C.P. Oxford: The Clarendon Press: London: Humphrey Milford, Oxford University Press. 1928. Pp. 368. 7*s.* 6*d.*

Dr. Singer has here attempted to trace the process y which medicine had its source in a number of olated sciences, united into one stream in the ghteenth century with the rise of the scientific ethod of inductive reasoning, and divided in our wn age into an ever-widening delta of ever-multi- lying specialties. His aim is, by treating of medical leas rather than of medical men, principles rather an details of practice, to indicate the Entelechy— soul—underlying the bewildering network of odern medical science. He fears lest facts be piled o too fast for the philosophers to rationalise them, d pleads for the understanding of medicine as a hole and of its purpose in human affairs. The story the infancy of medicine is kept within very strict unds, and more than half the book is devoted to s modern developments, the beginnings of which r. Singer sees at about the year 1825, which he takes the start of his Period of Scientific Subdivision. e traces in detail the development of the ideas which e now expressed in forms so much a common- ace of medical life that the realisation of their mparatively recent origin comes as a surprise. e shows, for instance, how the experimental founda- ns of modern medicine were laid by the work of e great physiologists Johannes Müller, Claude rnard, and Karl Ludwig less than a hundred ars ago. The cell theory and the study of cellular thology did not exist before the work of Bichat at out the time of the French Revolution, and other ystones of medical science such as the germ theory, æsthesia, and immunity are, of course, still more dern. The conquest of the tropics, the growing lightenment in the field of psychology, the revolution nursing, and the latest advances in pharmacology ing the absorbing story down to the present day.

The book is compact and well balanced, and is plete with charts and the interesting and recondite istrations upon which the author is an authority. e Oxford fount and the rich paper make the volume delight to the touch and eye. No one requiring a mmary of the position of medical science, and its ce in modern life, could wish for a more lucid thor or a more favourable vehicle.

DS TO ORGANIC CHEMISTRY.

By STANLEY F. SMITH. London: Baillière, Tindall and Cox. 1928. Pp. 114. 3*s.*

Mr. Smith has taken the course of organic chemistry a St. Thomas's Hospital Medical School as the basis a little book intended to help medical and science dents in reviewing a subject which they often d to be elusive. Prof. R. H. A. Plimmer, whose rse has thus been annotated, points out in a fatory note where Mr. Smith has been able to bridge the gaps inevitably left in the subject owing to the short time allotted to it. The notes and formulæ are well arranged and indexed, and the book should prove useful for its modest purpose.

OPERATIVE SURGERY.

Third edition. By J. SHELTON HORSLEY, M.D., F.A.C.S., Surgeon, St. Elizabeth's Hospital, Richmond, Va. London: Henry Kimpton. 1928. Pp. 893. 63*s.*

THIS book has a recognised place in contemporary surgical literature. It is built up on the usual lines, but certain subjects receive more prominence than is customary. Much space is devoted to plastic work, and the account of this branch of surgery is very good. The surgery of the vascular system is also considered fully, and is a subject upon which the author is well qualified to speak with authority. His own methods of pyloroplasty and of performing the Billroth I. operation are described, and his reasons for recommending them. We notice a certain unevenness, not in the presentation of the subject matter, but in the perception of the true value of different surgical procedures. For instance, quite detailed and illustrated accounts are given of Trendelenburg's operation for removal of a pulmonary embolus, after which no patient has survived more than a few days, and of Coffey's operation for excision of the head of the pancreas which has not yet been performed in man; on the other hand, the details of much more ordinary procedures, such as the removal of cervical ribs or hypophysectomy, are too briefly dismissed. On the whole, however, a high standard is maintained, and the book should retain its popularity.

DENTAL MEDICINE.

By F. W. BRODERICK, M.R.C.S., L.R.C.P., L.D.S. Eng., Hon. Dental Surgeon to the National Sanatorium for Diseases of the Chest, Bournemouth. London: Wm. Heinemann (Medical Books) Ltd. 1928. Pp. 364. 21*s.*

THE author of this book writes with deep sincerity and has assembled an enormous amount of material in support of his thesis, which is, very briefly, that the predominant underlying cause of dental caries is acidosis, whilst pyorrhœa alveolaris is the result of an attempt to compensate alkalosis. In support of this belief the book contains chapters dealing in considerable detail with such branches of physiology as the regulation of the hydrogen-ion concentration of the blood, the glands of internal secretion, calcium metabolism, and the chemistry and physics of the saliva. It is clear that Mr. Broderick's study of the literature on these subjects has been extensive, but it would appear that this study was not undertaken with an unbiased mind, for his numerous quotations are almost invariably selected with a view to supporting hypotheses which, in the opinion of many distinguished physiologists, are at present quite unproven. It would be unfair to so sincere and industrious a writer to dismiss his theories in silence, but it would be equally unfair to suggest that his book as it stands is a fitting one to be read and accepted by the uninstructed reader, especially if such a reader has had no more thorough medical education than is received by the average dental surgeon. For it may be said that nearly all Mr. Broderick's main conclusions could, by an equally careful selection from the published work of various reputable observers, be disproved or shown to be without a sound basis of fact. Any author is, of course, free to express his theories in writing, but to publish a book entitled "Dental Medicine" is a challenge to criticism, in that the perusers of such a book may expect from its title to find in it a reasoned exposition of the established facts concerned in the subject. We have been unable to find any important series of observations in this volume made by the author himself in support of his beliefs, and it seems fair to suggest that he would

have done far more on behalf of the theories which he sponsors if he had produced a reasonable series of some hundreds of observations on his own patients, carried out with unimpeachable biochemical technique, with a view to producing actual data to support his conviction that the acid-base equilibrium of the blood is disturbed in a specific manner in each of the two great dental diseases.

FOLKLORE OF THE TEETH.

By LEO KANNER, M.D., Yankton State Hospital, South Dakota. New York: The Macmillan Company. 1928. Pp. 316. 17*s*.

THIS book appeals to a wider circle than the professional reader, doctor, or dentist; it contains a surprising amount of information, bears evidence of reading and research, and is instructive as well as interesting. The contents are arranged in the following sections: number, shape, and eruption; popular dental hygiene; toothache and its cure; artificial deformation of the teeth; teeth as used outside the oral cavity. An appendix contains a bibliography and a glossary. Shakespeare would seem to have been one of the first to put in print the information, which must have been, even in his day, as old as the hills, that not even a philosopher can endure toothache patiently, while Burns cursed his affliction in robust Scottish verse. The chapter on plant treatment of toothache is dull reading, but it could not have been omitted from a work of this kind, and the rest of the book contains on almost every page interesting items of dental folklore. The golden tooth of the Silesian boy seems to have deceived nearly everyone save a canny Scot!

Details are given of the martyrdom of St. Apollonia, whose executioners, to punish the boldness of her confession, beat out her teeth and who thereafter became the patron saint of toothache; there is a frontispiece of the saint, reproduced from the painting by Dolci, at Rome. We do not observe any direct mention of soot as a popular tooth-powder. Harold Bluetooth is mentioned; one supposes him to have been the possessor of a dead incisor; but we miss Jenny Greenteeth. It may be that the latter is pure nursemaid fiction; but such was the name of the presiding genius of a certain pool in front of a rectory house on the Welsh border 60 years ago. When the children were allowed to fish in the said pool, with a "wurrm," they were always cautioned to beware of Jenny Greenteeth. In our day the myth was somewhat exploded, for an uncle, on one of these fishing excursions, had caught Jenny Greenteeth, who turned out to be a large eel. It is possible that, to the rustic mind, she may have represented the ghostly spirit of a previous rector, who chose the pool in front of his own door as the readiest mode of committing suicide. We cannot tell.

BIONOMICS.

Animal Ecology. By C. ELTON. London: Sidgewick and Jackson. Pp. 207. 10*s*. 6*d*.

ŒCOLOGY (for there is no reason for adopting the Americanised form of what was originally a German word) is the study of the relationships of animals and plants to one another and to their inorganic surroundings. Hitherto it has been mostly studied by botanists; this is indeed the first book on animal œcology to be published in this country and one of less than half a dozen written in English. The subject is one of much interest for its own sake, and its medical and hygienic implications are considerable. The control of many parasitic diseases depends on a knowledge of the habits, life-histories, food, and enemies of the lower animals which intervene in the cycles of infection; an œcological knowledge of rats, mosquitoes, and tsetse-flies is as important as full systematic information. Mr. Elton has himself made some important contributions (*Jour. Hyg.*, 1925, xxiv., 138) to the study of the periodic waves of excessive abundance which come over animals like lemmings, hares, and voles and end generally in epidemics, and has, in this book, provided an interesting and stimulating introduction to the whole subject.

JOURNALS.

AMERICAN REVIEW OF TUBERCULOSIS. April–June, 1928.—Dr. Henry D. Chadwick discusses the X ray and clinical diagnosis of pulmonary tuberculosis in children. He draws attention to the confusion that arises when juvenile and adult types of pulmonary tuberculosis are not separated into two distinct groups. The diagnosis of the juvenile type depends on a consideration of factors, the most important of which are radiographic evidence of calcified hilar glands and nodules in the lungs, the intradermal tuberculin test, and a history of exposure to infection. Physical signs are of less importance. None can be considered pathognomonic though interscapular dullness is due in some cases to muscular spasm, the reflex effect of inflamed mediastinal lymph glands. Auscultation and percussion are chiefly of value in so far as they determine the presence or absence of other disease. Calcified glands and nodules are definite evidence of tuberculous infection. In the absence of evidence of calcification enlarged or dense hilar shadows may be due to early infection in which case skin tests and a study of symptoms may supply further evidence of disease and indicate the need for careful supervision and treatment.—A statistical study of the results of artificial pneumothorax treatment at the Locomis Sanatorium during a period of 14 years is supplied by Dr. Andrew Peters. In a series of 273 patients no cases of gas embolism or pleural shock were encountered. Of all patients in whom any pneumothorax at all was induced, 42 per cent. were living at the end of 2 to 14 years, and 24 per cent. were reported in satisfactory condition. The end-results in the pneumothorax group were nearly twice as good as those obtained when no pneumothorax was possible. When a satisfactory collapse of the lung was secured tubercle bacilli disappeared from the sputum in 72 per cent. of the cases and over 60 per cent. were alive at the end of the period quoted.—Dr. F. M. Pottenger contributes a paper on factors fundamental to healing in tuberculosis. Primary infection is met by a non-specific response by the body cells. A reaction which is "largely non-inflammatory" results in the formation of tubercles at the points of attack. When allergy has been established as the result of the absorption of tuberculous products at the source of infection the reaction of the body cells towards bacilli and bacillary protein changes. On reinfection occurs inflammation and exudation dominate the process. The response is now specific. Primary infection is an acute disease; a secondary infection, even when the result is fatal, is marked by a chronic course. The pneumonic exudation which accompanies the spread of tuberculosis in lungs is the result of an allergic reaction. Such exudate may completely resolve and leave no scar. This is the explanation of the remarkable clearing occasionally noted in a series of comparable skiagrams of a patient's chest during the course of a disease whose early spread was shown by extensive areas of mottled shadows in the lung fields. Dr. Pottenger illustrates this by a series of plates which demonstrate very clearly how exudation may be absorbed and cavities close as the result of natural healing. This article might well be read as an introduction to that on Tissue Reaction in Tuberculosis by Dr. R. S. Cunningham, and the analysis of Modern Concepts in the Pathology of Tuberculosis contributed by Dr. Max Pinner.

Dr. Charles Terry's book on "The Opium Problem" which was reviewed in THE LANCET last week, can be obtained in England through Messrs. Bailliere, Tindall and Cox, 8, Henrietta-street, London, W.C.

THE LANCET.

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THE IMPROVISED KNEE-JOINT.

THE operation of arthroplasty of the knee, or the eplacement of a joint that has been lost through isease or surgical operation, has taken a long time o make progress in the favour of surgeons. More han a quarter of a century has passed since MURPHY, f Chicago, whom Sir BERKELEY MOYNIHAN has escribed as one of the supremely great men in edicine through all generations, succeeded in making seful new joints in the place of pre-existing bony nkyloses. Other surgeons have been slow in follow-ng up his methods, until PUTTI, of Bologna, reopened he subject soon after the war, and showed a number f remarkably successful results from this operation. ven now only a small number of surgeons seem to be dopting the technique, among them being Prof. EY GROVES, Dr. W. R. MACAUSLAND, and in the st few years Dr. F. H. ALBEE.

The reasons for a cautious advance are not far o seek. Interference with the joints of the upper mb when properly performed often give excellent sults, but the conditions are very different in the wer limb, which has to bear the weight of the body esides taking a large part in its propulsion. The knee the joint which owes its stability least to the shape the ends of the bones which enter into it and most the surrounding muscles, the ligamentous and rtilaginous apparatus. Hence it is obvious that he mere re-forming of bone-ends is not likely to roduce a useful joint, while to attempt to make new gaments such as normally exist inside as well as round the site of the articulation would be a hopeless sk. Long atrophied muscles, moreover, do not em to offer good hopes for a secure control of the int. Add to this the fact that the newly made nee-joint must bear the whole body-weight at least, nd often much more than that, and it is not surprising at some of the most enterprising and skilful surgeons ve shrunk from attempting the operation. Besides natomical and mechanical objections, there are others a functional nature. The patient who has a firm ny or even fibrous ankylosis in a good position is eady in the possession of an exceedingly useful, rong, and painless limb. It is true that he finds it kward in public conveyances, supposing that he so fortunate as to secure a seat, and in the balconies theatres. He is handicapped in the pursuit of the ore athletic sports, and riding on horseback is practi-lly forbidden to him. When such a patient is warned at the operation is a severe one, not without danger limb and even to life, and that the after-treatment long, likely to be painful, and sure to call severely on his powers of perseverance and endurance, also at complete restoration of function cannot be aranteed, he may well decide to leave things as ey are. Moreover, the workman whose trade may quire him to flex his knee-joint to its full normal tent has little to hope for from arthroplasty, since en passive flexion beyond a right angle is rarely ssible after the operation.

There are, however, exceptional cases in which the hope of regaining a useful knee-joint outweighs other considerations. Such, for instance, was a cavalry officer whose future career depended on his being able to ride; he formed one of Prof. PUTTI'S most brilliant successes. Surgeons who desire to be in a position to help such cases should study a recent article by ALBEE.[1] He supplies valuable statistical information of results of operations by various surgeons and describes a modification of technique which has given good results in his hands. This modification is ingenious, resulting from his observation of certain defects in the remote results of some of MURPHY'S cases. Supposing that the wound has run an aseptic course—and no surgeon whose technique is not reliable in this respect should dream of attempting arthroplasty—the chief causes of functional failure are (1) deficient range of flexion and extension, and (2) too great lateral laxity allowing deviation of the leg into genu valgum or genu varum. With the view of preventing lateral instability, which he thinks is a more common cause of failure than lack of flexion, ALBEE substitutes a wedge-shaped for a rounded articular surface of the femur, making a closely corresponding surface on the head of the tibia. Mechanically this is a sound theory, for, as ALBEE says, "weight-bearing forces the apex of the wedge-shaped end of the femur so firmly into the tibia that the danger of lateral instability is practically eliminated." There is no reason to doubt that this is true also in practice, but the conditions which ALBEE postulates as necessary for the lateral security of the joint seem likely to hinder flexion. He insists that each of the two faces of the wedge, which are to lie at an angle of 120° with each other, should be plane, a form which is not likely to allow much angular antero-posterior movement, unless there is great laxity of soft parts. This difficulty does not arise when the rounded shape of the bone ends is adopted. It must be admitted that the photographs reproduced give no indication that his technique has led to restriction of antero-posterior movements of a degree to prevent a useful amount of flexion. All operators are agreed that bony ankylosis of the knee is more suitable for arthroplasty than fibrous. The difference is probably due largely to the fact that among cases of fibrous ankylosis are included all cases of healed tubercle. Yet there seems no theoretical reason why a tuberculous knee in which the disease has long ceased to exist should not afford as good a result as one with osseous ankylosis due to an acute non-tuberculous infection. Even with modern means of examination such as X rays, however, it may not be possible to determine beforehand whether the inflammatory process is completely organised or only quiescent. But when a knee-joint has been successfully excised for tubercle it is probable that all diseased tissue has been removed, and the subject of such an operation might be given a new joint if he finds his disability distressing, without fear of stirring up a latent infection. ALBEE reports a most satisfactory result of arthroplasty in a knee formerly tuberculous. He adds a useful hint as to the choice of cases. Patients who are neurotic, unstable, and timorous are not likely to be such good subjects for arthroplasty as the bold and calmly hopeful who have shown pluck under previous sufferings and perseverance in making the best of their disabilities. Convalescence is a tedious affair, and the final result depends largely on the prolonged coöperation of the patient.

[1] Original Features in Arthroplasty of the Knee with Improved Prognosis. By Fred. H. Albee, M.D., F.A.C.S., Surgery, Gynecology, and Obstetrics, September, 1928, p. 312.

THE NATURE OF THE ROUS TUMOUR.

THE relationship of the filterable tumours of the fowl to mammalian neoplasms is one of the burning questions of cancer research at the present time. Until recently many pathologists were inclined to consider these fowl tumours as a disease sui generis, while some authorities even classified them as infective granulomata. Any observation which tends to establish an essential similarity or dissimilarity between these tumours and mammalian neoplasms is therefore of importance. Two years ago Prof. S. RUSS and Mr. G. M. SCOTT published in our columns [1] the observation that the Rous tumour when irradiated in vitro was extremely resistant to the destructive action of X rays as compared with mammalian tumours. The same resistance was exhibited by a cell-free filtrate of the Rous tumour, which contains the causative agent of this growth. If the causative agent is resistant to irradiation one would naturally expect that the Rous tumour when irradiated in vivo would also prove to be very resistant. Indeed RUSS and SCOTT recorded observations which proved that this was the case. Soon after the publication of their results Dr. J. C. MOTTRAM [2] set out the results of experiments which showed that under suitable conditions the Rous tumour when irradiated in vivo could be made to regress as readily as some of the transplantable tumours of the mouse and the rat. This result was unexpected and indeed paradoxical. The causative agent is present in the tumour, and as the experiments in vitro show, is very resistant to irradiation. Nevertheless the tumour regresses. The fowl in which a tumour has undergone regression shows the same phenomenon of resistance to a second transplantation that is observed in mice and rats under similar conditions. In a recent paper [3] Dr. MOTTRAM has recorded the results of experiments which show how this remarkable result can be accounted for. The outcome of his first series of experiments seemed to deepen the mystery. He irradiated tumours growing in fowls with doses of radium known, from previous experiments, to be sufficient to cause ultimate regression of these tumours. Before regression was complete the tumours were removed and dried in vacuo. When this dried material, which did not contain living cells, was inoculated into fresh fowls new tumours were formed. The same result was obtained with a filtered watery extract of regressing tumours. It is clear, therefore, that a tumour regressing under the influence of irradiation still contains the causative agent or virus in an active form. Why, then, does an irradiated tumour not infect the surrounding tissues and grow by extension, instead of regressing as it actually does?

The answer to this question was found by irradiating areas of the skin and then, after scarifying the skin, applying to it active filtrates of the Rous tumour. Such filtrates, though producing tumours in non-irradiated areas of scarified skin, were unable to do so in the irradiated skin. Histological examination of these skin areas showed that the fibroblasts which are abundantly present in a scarified area of non-irradiated skin are absent in previously irradiated skin. Now MCINTOSH and BAKER have shown very conclusively that the Rous tumour arises from a transformation of the normal fibroblasts, and Dr. MOTTRAM'S observations confirm their conclusion. The apparently paradoxical behaviour of the Rous tumour towards irradiation explains itself therefore as a manifestation of the extraordinary specificity o the causative agent or virus, which can only infect th fibroblasts of the fowl, but no other cell. Irradiatio of the Rous tumour in vivo damages not only th tumour cells, but also the normal cells of the hos which immediately surround the tumour, so that i the neighbourhood of an irradiated tumour there ar no fibroblasts which can be infected by the causativ agent of the irradiated tumour. These observation are of interest not merely because they offer a adequate solution of a particularly intricate proble connected with the filterable tumours of the fowl; the also have a bearing on the more important gener question of the relationship of these tumours t mammalian neoplasms. The demonstration of specific causative agent separable from the living ce in the former group seems to justify the standpoin that these tumours form a disease sui generis entirel distinct from true neoplasms and, as already state until recently this was the attitude generally adopte by cancerologists. The work of GYE, although crit cised in its experimental aspects, has nevertheles been instrumental in changing this attitude, an there are to-day few workers in cancer who ar prepared to deny outright the true malignant natu of these tumours. The essential similarity betwee the reaction of the Rous tumour to irradiation an that of true mammalian new growths is evidence i support of the view of the fundamental similarity o these two types of neoplasms, and it is the mo convincing as it was unexpected on a priori ground

[1] THE LANCET, 1926, ii., 374.
[2] Ibid, p. 1266.
[3] Brit. Jour. Exp. Path., 1928, ix., 147.

DEFECTIVE OBSTETRICS.

New Zealand is justly proud of its low infanti mortality-rate; in 1900 this was 75·2 per 1000 birth last year it was 38·7—a world record. The matern mortality-rate, on the other hand, was 4·91 per 100 live births, compared with 3·90, the last five-year average for England and Wales—an increase 0·66 on the figure for the previous year.[1] At th same time the rate for puerperal septicæmia ro from 1·37 in 1926 to 2·51 in 1927. This rate, on th graph prepared by the Government statistician shows a peak about every ten years, and last year figure was the highest since 1885. The death-ra from other puerperal causes was comparatively lo Prof. Henry Jellett, late Master of the Rotunda, an now consulting obstetrician to the New Zealan Government, considers that the real maternal mo tality-rate is even higher than is recorded. H attributes this great loss of maternal life to two ma causes: (1) the insufficient education of medic students in obstetrics, (2) the failure to provid sterilised dressings.

The unduly high proportion of cases in whic forceps were used in hospital—namely, 12·5 per cen —is in itself evidence to Dr. Jellett of faulty obstetric training. The National School of Medicine is a Dunedin University, and in November last D Jellett, in accordance with the instructions of th Minister, met the medical faculty to discuss the bes methods of improving the training. To continu in what are substantially the words of his report the inadequacy of the present methods, which fully recognised by the faculty, is in no way due t want of effort on the part of the teachers, but rath to want of adequate clinical material and of th necessary funds. When the new regulations fo the training of midwives bear fruit, the midwife wi be better equipped in the art and practice of mi wifery than the medical practitioner. This is a ver serious state of affairs, because the midwife is onl

[1] Report of the Director-General of Health, New Zealan for the Year ended March 31st, 1928. Department of Healt H 31. Wellington: W. A. G. Skinner. 1928. Pp. 78. 1s. 6

rained to conduct normal labour, and if the medical ıan is insufficiently educated he will be unable to eal with emergencies, and when confronted with hem will fall back on radical surgical procedures ıstead of the milder obstetrical methods which ould serve better. If the medical practitioner's ducation is insufficient, it is probably better that he ıould not attend confinements at all. The Plunket ociety for infant welfare, which cares for the mother ı pregnancy and the infant during its first year of fe, has made admirable progress assisted by the ıpport of the Government and the general public. he obstetrical department of the medical school, owever, the work of which is equally important, is ft in the same financial position as it occupied ıany years ago. It has no professor at its head, o suitable hospital in which to educate its students, nd insufficient funds to pay its teachers. The public re probably unaware of the close connexion between ıe poverty of this department and the high maternal ıortality-rate. Provision of the needed funds is resumably a matter for the Government, and one hich in the present financial position of the Dominion ıey may find very difficult. There must, however ays Dr. Jellett), be many wealthy individuals or orporations who would be willing and able to help the need were brought home to them, but this has, o far, not been done. The faculties of medicine nd surgery have each £1600 a year, mostly from rivate benefactions, with which to pay their staffs; ıe faculty of obstetrics has a bare £530, and even ıis is to be reduced at the end of this year by £75. r. Jellett suggests that the Department of Health ıake a public demonstration of the needs of the bstetrical department of the medical school a part its propaganda for the reduction of maternal ıortality.

The second great need, that of asepsis, is treated ery fully by Dr. T. L. Paget, inspector of hospitals. e has succeeded after great exertion in making ıeap and efficient sterilising equipment available ı hospitals, and in minimising the spread of puerperal epsis in maternity institutions, holding that if ıe same standard of asepsis were maintained in rivate practice as under the regulations in hospitals, uerperal sepsis rates for the Dominion would greatly iminish. This depends not only on the education the medical man, but on the coöperation with him the patient and nurse. The training of nurses and idwives in asepsis is slowly improving, but much mains to be done, especially in private practice. To ıote Dr. Paget: the adoption of asepsis in surgery ok 15 years, and the training of the nurses who had ot learned it originally was done by surgeons in tual practice. The training of maternity nurses asepsis can, he says, only be done in a reasonable me, when every medical practitioner feels it his ıty to see that it is completely carried out. The ıtient must be made to recognise its importance, ıd be advised to choose a nurse who understands it, ıd to provide a sterilised maternity outfit. The ıtenatal clinics supply these outfits, yet only 515 a possible 1900 patients confined in private took ıe opportunity of obtaining them. Dr. Paget is ging their provision in all centres of maternal elfare; they cost about £1 5s. each if made of welling (convertible after use into babies' napkins), ıd 10s. if made from old sheets. He sees the key the problem of maternal welfare in coöperation tween the expectant mother and her husband, well-trained antenatal clinic nurse, an alert and fficiently trained medical attendant, and a well-ained maternity nurse or midwife on the one hand, ıd the services of the hospital board, which can ovide hospital accommodation for patients who ed it, and services for sterilising outfits for all tients on the other. If the Dominion Govern-ent and people attack the problem on these ıes under the energetic leadership of obstetricians ce Drs. Jellett and Paget, there is no doubt of their ccess, but a great awakening of public interest is viously necessary. The recent inauguration by Mr. Victor Bonney of the New Zealand Obstetrical Society marked a definite step forward by the profession; the entire frankness of the Director-General's report indicates that the Dominion Government is willing to play its part. The education of the general public lies with the Minister of Health and the lay press.

Annotations.

"Ne quid nimis."

INTERNATIONAL VISIT TO BRITISH SPAS.

MEDICAL hydrology has had its meetings at continental health resorts whether in France, Italy, or Czecho-Slovakia, but until now no international medical party has visited British spas. This is to be put right when the International Society of Medical Hydrology holds its annual meeting from the 9th–17th of next month. The rendezvous will be London, where a reception will take place at the house of the Royal Society of Medicine on Tuesday night, Oct. 9th, and conferences have been arranged for the two following days, under the presidency of Lord Dawson. The first of these discussions, to be introduced by Dr. C. W. Buckley (Buxton), will deal with the organisation of the spas in various countries, especially for the treatment of insured persons, and the second with the humoral factor in disease, with particular reference to the action of waters. After this the party, numbering over 100 individuals of 17 nationalities, will make a tour of the spas, where they will see at first-hand the whole development of the native waters of Britain. At Harrogate opportunity will be given for considering specially the treatment of children by waters and baths, and at Buxton there will be a conference on rheumatism as a national problem. Visits will also be paid to Droitwich and Bath. Places are still available for a limited number of members of the medical profession who would like to make the tour of spas under such stimulating conditions and to take part in the discussions. A programme of arrangements in three languages is available, and particulars may be obtained from the Hon. Secs. of the Society, 139, Marylebone-road, London, N.W. 1.

LOCAL ANÆSTHESIA IN THE REDUCTION OF FRACTURES.

LOCAL anæsthesia is making rapid advances and is being used more and more for surgical conditions which formerly could be treated only under general anæsthesia. English surgeons are perhaps more conservative in their attitude towards local anæsthesia than their American and Continental contemporaries, and, while this is a tribute to the excellence of our anæsthetists, the use of local anæsthesia might with advantage be extended. A useful application has recently been described in two American medical papers—namely, the reduction of fractures of the forearm after infiltration anæsthesia with novocaine or procaine. The shorter article of the two describes two cases of fracture of the forearm which were reduced at the Boston Dispensary after infiltration with 1 per cent. novocaine solution.[1] In the other article [2] Dr. Carl O. Rice, of the Minneapolis General Hospital, gives a more detailed description of this method of reduction, a method he has used with success in a series of more than 50 cases treated during eight months in the receiving ward of his hospital. In no case did the manipulations cause pain, and the greatest discomfort that was ever noticed was a feeling of pressure or a painless grating during reduction. The reduction itself was always easy, and it was never necessary to use much force owing to the

[1] New Engl. Jour. of Med., 1928, cxcix., 66.
[2] Jour. A.M.A., 1928, xc., 1768.

perfect muscular relaxation. The only two failures reported were in cases in which the deformity recurred and further infiltration was tried on the next day. The use of a second infiltration is now considered unwise, and general anæsthesia is recommended for the second attempt. Dr. Rice uses a 1 per cent. solution of procaine hydrochloride and the method he employs for the induction of anæsthesia has the merit of great simplicity as no very accurate visualisation of the important structures round the wrist-joint is necessary. After sterilisation of the field of operation with alcohol and iodine two subcutaneous wheals are raised about one inch above the line of fracture in the radius, one opposite to the dorsal border and the other opposite to the lateral border. A needle 2½ in. long is now inserted through the wheal opposite the dorsal border, and the dorsal and lateral surfaces of the radius are infiltrated in turn without withdrawing the needle. The ventral surface is infiltrated from the second wheal, the radial artery and the median nerve being avoided by keeping the needle close to the bone, so that it passes posterior to these structures. If no blood appears in the syringe during the injection the needle must be pushed in the direction of the fracture until blood appears and then about 5 c.cm. of the anæsthetic solution are injected into the effused blood at the site of the fracture. The total amount of anæsthetic used is 15 to 60 c.cm., and manipulations may be started about half an hour after the injection. Obviously this method cannot be used in the presence of infection or in compound fractures, and the risk of infection in uncomplicated cases must be considered. The author, however, considers this to be negligible when reasonable precautions are taken, and no case of accidental infection has occurred in his experience. The fact that the anæsthesia lasts for some time makes it possible to have a radiological examination after reduction; and if necessary further manipulation may be undertaken at once to improve the position of the fragments. It may be stated, therefore, that this method is one to be considered carefully, as it has many applications, even if it is not adopted as a routine in cases in which nitrous oxide anæsthesia would be adequate. The problem of a fracture of the lower forearm, with slight deformity, in the aged, the plethoric, and the alcoholic need no longer exist to worry the busy out-patient surgeon.

THE CHEMICAL COMPOSITION OF DENTAL ENAMEL.

PROBABLY the technical difficulties attendant on both the chemical and microscopical examination of the enamel of teeth have served to stimulate investigation of a tissue which forms so small a part of the body. But the interest has not been purely academic, for as the external calcified covering of the teeth, enamel represents the first line of defence against caries; when it is destroyed the tooth is left almost, though not entirely, unprotected against destruction. Much of the work on enamel has been histological, but various chemical analyses of this tissue have been made. In this country Sir Charles Tomes's findings in 1896 were that though a trace of organic matter might be present it was not enough to amount to a weighable quantity. Lovatt Evans in 1913 published an analysis and concluded that enamel contained at least from 1 to 2 per cent. of organic matter. Since then no further chemical analyses have been recorded in this country until E. Sprawson and F. W. Bury communicated a paper recently published in the Proceedings [1] of the Royal Society. The specimens of enamel examined were obtained by filing with a metal file. To remove any contamination from the file each specimen was exposed to a powerful electro-magnet such as is used in ophthalmic surgery. The nitrogen content was estimated by Kjeldahl's method, but the ammonia content was determined colorimetrically by means of Nessler's solution. The carbon content was estimated by means of a special apparatus devised by Dr. W. H. Patterson. As a result of a series of 20 analyses Sprawson and Bury find that the maximum organic content of enamel calculated from the highest nitrogen content is 0·15 per cent. The amount of protein calculated from the carbon present is a little higher. Samples of enamel from young persons, from adults, and from the deciduous teeth showed practically no difference in the organic content. Sprawson and Bury appear to have taken careful precautions to avoid fallacies which might vitiate the analyses and to have used very delicate methods. Their results, if they are confirmed, will have a definite bearing on some of the hypotheses of the causes of dental caries and its prevention which are being widely and increasingly championed in many quarters. During the last decade as a result of the microscopical study of enamel there has been an increasing tendency to believe that enamel, far from being practically an inorganic tissue, contains a definite amount of protein and that it is thus a vital tissue, capable of reacting to injury like other tissues so long as the dental pulp remains vital. The evidence for this hypothesis is of a cumulative character and drawn from a variety of observations. Enamel can be stained not only by the treatment of sections, but also by diffusion through the dentine in whole teeth. This would suggest that calcification is incomplete and by inference that the stained areas contain protoplasm. H. Malleson, by means of a delicate technique, was able to decalcify enamel and to demonstrate that the residue showed a definite structure. By analogy with other calcified tissues this would suggest that it contains a distinct organic basis sufficient to show the character of its structure after decalcification. Although there is a definite line of demarcation between the dentine and enamel, yet the dentinal tubules may extend a short way into the enamel. The late Howard Mummery demonstrated the presence of what he termed fibrous bundles extending from the dentine into the enamel. A. Livingstone attempted to widen this conception and described certain experiments which gave some support to the suggestion that the enamel might act as an osmotic membrane. An observation of much interest was made by Mummery when he described the occurrence of translucency in enamel in cases of early caries of enamel. These closely resembled the translucent zones seen in dentine in the early stages of caries, which zones are known to be caused by the reaction of the pulp producing hypercalcification of the contents of the dentinal tubules. Mummery suggested that the translucent zones in enamel might be caused in the same way—a view which postulates the vitality of enamel. Each or any of these various observations made from different angles might be susceptible of some other interpretation, but their cumulative effect certainly suggests that enamel is not an inert tissue incapable of any change after formation except that of destruction by caries or abrasion. The high degree of immunity to caries in some individuals and the equally high susceptibility in others, and also the alternations of susceptibility and immunity often found in the same person at different times might reasonably be explained by changes occurring in enamel after the eruption of the teeth. From this it was an easy step to suppose that it might be possible to influence the resistance of the enamel in various ways, as implied by M. Mellanby in her later work. But whatever inferences might reasonably be based on staining appearances in enamel as to the presence of organic matter, such inferences should be capable of confirmation by chemical analysis and without such confirmation they are deprived of much of their force. In a recent book reviewed on another page Mr. F. W. Broderick refers to Tomes's dictum, that enamel is an inert tissue, as a damper (on the development of the doctrine of the vitality of enamel) which was removed by the work of Lovatt Evans. He makes no mention of the results of Sprawson and Bury. The importance of the discrepancy in results in the view of some dentists is that while the percentage of organic matter found by Lovatt Evans might be sufficient to allow of

[1] On the Chemical Evidences of the Organic Content of Human Enamel. Proc. Roy. Soc., B., vol., cii. 1928.

netabolic changes in the enamel, the percentage ound by Sprawson and Bury, confirming Tomes, is onsidered to be almost negligible. But the dis-repancy is not really so very great, and probably one of the experiments here described shows whether he enamel is alive or not. That depends on its eactions to conditions rather than on its chemical omposition. And in any case it is probably only a mall part of it which *can* be alive. Pending further ork no decision can be taken as to whether enamel nce formed is incapable of change or whether it emains within the pale of nutrition.

SWIMMING BATH WATER.

THE Wheatley Memorial, as we pointed out last eek, lays very just stress on the desirability of unning water for public bathing. Even the water-ress refuses to use a stagnant pool. Nevertheless must not be forgotten that it is possible to disinfect he water of public swimming baths so as to make it afe for bathing or even safe (if not appetising) for rinking. Dr. G. K. Bowes in the current *Journal* f the Royal Institute of Public Health regards it esirable to adopt as stringent a standard for bathing ater as for drinking water. To do so, however, equires a disinfecting agent continuously present in he water, the simplest and cheapest being free hlorine in the proportion of 0·2 to 0·5 parts per illion. Dr. Bowes bases his recommendations on the xamination of the water of public baths in Birming-am during two consecutive summers. In America, it ppears, use is made of a standard frankly called "the ndex of stagnation," which consists of the number of athers divided by the amount of clean water added, easured in thousands of gallons. It will readily e admitted that under a controlled water régime of his kind the incidence of conjunctivitis is likely to e small and any possible risk of the spread of oliomyelitis in this way disappears altogether. The ccurrence of suppurative otitis after bathing is on ather a different footing, for this is presumably due mply to the careless admission of water to an infected iddle ear whose safety lies in remaining dry. The se of natural running water remains the obvious ourse for bathers who dislike the accumulation of acterial and human detritus, and we have little oubt that the memorial to be raised to Dr. James Wheatley will produce a good response.

THE LIMITATIONS OF PLASMOQUINE.

THE Hamburg School of Tropical Medicine, and remost amongst them Dr. Otto Fischer,[1] have een energetically investigating the action of plasmo-uine in human malaria; nor have they neglected he less favourable side of their subject, careful ecords being kept of the toxic symptoms occasionally aused by the drug's administration. Of these, ethæmoglobinæmia is the most alarming, resulting s it does, in cyanosis. Experiments on otherwise ormal cats have shown that daily doses of 0·1 to 15 g. plasmoquine invariably produce methæmo-obinæmia, but that the intimate mixture of uinine sulphate with plasmoquine seems largely mitigate this and other toxic phenomena. Thus has been shown in clinical practice that, if uinine be combined with plasmoquine in a dose 1·0 g. daily, either no methæmoglobinæmia results the amount is negligible. Subcutaneous injec-on of plasmoquine has been attempted at Hamburg, d in doses of 0·02 g. daily was not attended by any -effects; but this quantity is too small to have any ermanent effects in eradicating the infection, though it may control multiplication of the para-tes. On an average the minimal therapeutic dose plasmoquine is 0·06 g. daily, or 0·01 g. to every kg. of body-weight in benign tertian malaria. subtertian malaria a total amount of 0·15 g. injected, or a total amount 0·2 g. by the mouth, suffices, whether spread over several days or given more massively within 24–36 hours, to eradicate crescents from the peripheral blood within a period of five days. Failure to banish crescents only occurs when the schizonts are not sufficiently exterminated and can undergo transformation into gametocytes. According to Fischer's observations, plasmoquine-resistant forms of malaria are extremely rare. This is specially true of the benign tertian parasite, in which Fischer has not seen a single failure, but in sub-tertian malaria three instances have been noted, in which crescents persisted in the blood stream while the patient was taking full doses of plasmoquine. Then it has already been claimed that plasmoquine exerts a selective effect upon the crescents, and his statement appears somewhat paradoxical, but the anomalous effect can be explained by failure of the drug to cause rapid death of the younger schizonts in the earlier stage of the infection. When plasmo-quine is combined with quinine there is no such failure, which is a further argument in favour of combining these two drugs and of administering the plasmoquine component in a subminimal therapeutic dose.

[1] Münch. med. Woch., August 10th, p. 1369; and August 17th, 1417.

SELF-KNOWLEDGE AND MENTAL HEALTH.

IN a paper read before the British Association Dr. William Brown stressed a point of great importance in the application of the method which he prefers to call "deep analysis" to the cure of psychoneuroses or symptoms referable to faulty adjustment of the mind. That is, the necessity, if a real and lasting cure is to follow, of ensuring not only that the patient shall acquire adequate knowledge of himself, his real needs and his errors, but also that he shall apply that knowledge to setting himself in order, correcting his faulty tendencies and habits, and developing an enlightened self-command. It seems that the more devoted followers of Freud are inclined to neglect this constructive aspect of analysis. Dr. Brown criticises the use of the term "psycho-analysis" for both of two distinct concepts that should have distinct names—first the Freudian method of deep analysis by free association; and, secondly, the Freudian theory of mental function and the manner in which it is modified by this method. This ambiguity is probably not so much a cause of the Freudian tendency to under-rate the value of constructive re-education as the expression of an attitude of mind, not confined to the Freudians, that considers the method more than the result. It is a pity that this attitude should exist, but that it does is shown by the divergencies which are so evident between the various schools of psychological thought and impose such a handicap on progress. Dr. Brown therefore uses the term "deep analysis" for the method, reserving "psycho-analysis" for the body of doctrine.

The Freudian system lays what many, including Dr. Brown, consider a disproportionate stress on self-knowledge. Deep analysis is a process by which, in the course of many months and sometimes years of passive re-living of infantile experience and of the "transference" to the analyst of the emotional reactions which have been insufficiently related to the parents and to other persons who have partially replaced them, the patient acquires a knowledge of the primitive layers of his mind. In discussing his experiences with his analyst, who for the time being stands to him for an immensely superior personality, on whom he is extremely dependent and by whom he is highly suggestible, he inevitably adopts, often wholesale, the theory by which the analyst directs his method. Obviously the more rigid this theory is the less will the patient's own personality be able to evolve its own theories and shape the course of its own re-education. And if one thing is held by the leaders of analytical thought to be more important than any other it is that the patient must be led to think for himself, to work out his own salvation. It is for the analyst to provide the material and to

indicate the ways from which the patient shall choose, but ultimately the patient himself must decide which way he shall go and what use he shall make of the material. It is of no use reducing the patient to a state of entire dependence and then turning him loose. After the analysis has been completed and the deepest emotional complexes and their ramifications are laid bare, there comes what many workers consider even a harder task—the education of the patient up to the point where he can free himself of this dependence and become an autonomous being. This is where many analysts, and among them many Freudians, fall short; they do not finish their job, and the patient has either to go elsewhere or remain almost as imperfectly adapted as he was in the beginning.

It is obvious, therefore, that the constructive analyst will exercise great discrimination in the material he provides. It is no good spending weeks in working out infantile phantasies if the resulting knowledge is not going to be usefully employed in the reconstruction by which the patient hopes to adapt himself to the world. The analyst who adheres too closely to a preconceived method will almost inevitably allow his patient to pursue his way through many weary and overgrown by-paths which lead nowhere but into an impenetrable jungle and from which the return may be difficult and painful. The good analyst, like the good artist, knows what to eliminate and where to stop. Dr. Brown speaks of the great resistance which patients sometimes manifest to the process of analysis—"I wish I had not come. I ought not to have come to-day." Some degree of resistance is inseparable from an experience which must at certain crises be extremely unpleasant, but there are almost certainly resistances which arise from the real conviction of the patient's own creative personality that the way ahead of him is one that he would do better to avoid. An experienced man will often oppose his patient's resistances, but he will always respect them; some kinds of broken resistance may mar an analysis as badly as an unnecessarily cut nerve or tendon may mar a surgical operation. It is undoubtedly possible to have too much, even of such a good thing as self-knowledge. Mental analysis has long established itself as an indispensable weapon against the storms and stresses with which life assaults the mind, and the need to-day is, as Dr. Brown says, for analysts with independent and vigorous minds and a determination to think hard for themselves and evolve their own methods and theories. As is the master, so is the pupil, and the more completely an analyst has worked out his own transference on the master of his school and become self-directing, the more completely will he enable his patients to work out their transferences on himself.

X RAYS AND WHITE BLOOD CELLS.

THAT in the treatment of blood conditions repeated divided doses of X rays are more effective than a single massive dose is a principle generally accepted by radiologists, though up to the present it has lacked experimental proof. Such proof is in some measure supplied by the recent work of W. V. Mayneord and A. Piney [1] carried out at the Cancer Hospital. Using a carefully standardised technique, these observers in the course of an investigation into the effect of X rays upon the blood and blood-forming organs, found that a much greater result was produced in rabbits by a dose of approximately 500 R spread over 24 days than by the administration of the same dose at one sitting. As criteria of the effect of radiation upon the blood, these observers used the changes brought about in the three orders of white cells—lymphocytes, neutrophiles, and monocytes. They confirmed the old observation of Heinke [2] that the first and most striking effect of radiation is a progressiv diminution in the number of lymphocytes, to b followed by an increase in the neutrophiles and, the dosage is pushed to extremes, by a rise in th monocytes. At the Cancer Hospital it was foun that a persistent increase in the monocytes usuall served as an indication of irreparable damage an was followed by the death of the animal. Whethe or not the monocyte of the rabbit is to be regarde as the strict homologue of the same cell in the huma being remains to be decided; in any case this observa tion obviously calls for similar investigations in th case of human beings receiving X ray treatmen Typical lymphopenia was found as an early man festation in the blood of the women affected by th radio-active substances in luminous paint, to whor Sir Thomas Oliver refers (see p. 634); it would be c interest to know if in the cases which proved fata the monocytes were found to be greater in numbe than the lymphocytes. Mr. Mayneord and D Piney found in the case of rabbits that deat inevitably ensued if the monocytes in the blood cam to exceed the lymphocytes in numbers. Working o the spleens of radiated animals Dr. Piney was abl to demonstrate a selective action on the part of th rays for the lymphoid tissue of the Malpighian co puscles, and he suggests that a generalised selectiv action upon lymphadenoid tissue is the explanatio of the lymphopenia induced by radiation. Tha lymphadenoid tissue is peculiarly susceptible t X rays is shown by a number of clinical observation notably the susceptibility of the glands in Hodgkin disease and of the tumour masses in lymphosarcom to the action of these rays.

[1] British Journal of Radiology, August, 1928.
[2] Mitteil. a. d. Grenzgeb. d. Med. u. Chir., 1905, xiv., 21.

"THERAPEUTIC-MINDEDNESS: A PEDAGOGIC PROBLEM."

UNDER this heading Dr. Paul Reznikoff, of Ne York, attacks [1] the doctrine that in medical practic treatment is less important than diagnosis. Whils strenuously opposed to a return to "the enormou number of drugs and methods that preceded the ag of therapeutic nihilism," he maintains that preser methods of instruction fail to develop a correc mental habit, which he calls therapeutic-mindedness a desire to heal. On analysing the treatment give in different diseases at a certain hospital, he foun much support for his view that therapeutic-minde ness is at a low ebb. In lobar pneumonia, for instanc good or questionable treatment was started in th first eight hours of treatment in only 64 per cent. c cases. Generally speaking, the less dramatic th disease the lower was the percentage of effectiv treatment. Whereas all the patients in coma at onc received good treatment, the percentage of cases i which it was given immediately was only 50 fo meningitis, 70 in broncho-pneumonia, and 28 i colitis, and the unfortunate sufferers from sciatic were none of them efficiently treated during the first eight hours. Dr. Reznikoff is well aware tha it is largely fatigue that causes the intern who ha completed history-taking and physical examinatio to omit much thought of treatment, and he think that the remedy for this faulty attitude is not s much to provide separate courses for the teachin of therapy as to combine the teaching of diagnos and treatment in such a way that in the mind of physician failure to alleviate a headache or insomni shall rankle as much as failure to diagnose a aneurysm. In order, therefore, that the clinica clerk shall give proper attention to his therapeutic he should attend not only a course in pharmacolog and theoretical therapeutics, but also medicatio conferences and "diet conferences," and—perhap most important of all—demonstrations of such pro cedures as colon irrigation, steam inhalation, throa irrigation, hot packs, and bed-making. After eac procedure or demonstration the uses of the measu should be discussed, and Dr. Reznikoff finds tha

[1] Jour. Amer. Med. Assoc., August 18th, p. 450.

the students become so interested in these conferences that many express their desire to spend some time as orderlies in the wards in order to master the methods.

With such a course of instruction and with the objects that underly it none can fail to sympathise. Many practitioners must wish that they were more in touch with the actual drugs they prescribe and with the methods they order nurses to carry out; it is more than likely, for example, that a large proportion of medical men have neither administered nor observed the administration of the simple soap enema. To correct such defects in experience is obviously desirable, and the attempt is made with more or less success at many of our hospitals. The reader, therefore, may be left wondering whether there is any reason for a cleavage between those who advocate treatment and diagnosis respectively; both wish the patient well, and both are supposed to be making intelligent use of the known facts. But undoubtedly there is some such cleavage. The conservative physician is especially impressed by the fact that all forms of treatment are but mild adjuvants to Nature, and consequently places most highly the need for an estimation of the diagnosis and course of the disease; the enthusiastic "progressive" physician is anxious at all costs to see some improvement or alleviation by whatever methods are available. Both schools are liable to fall into serious error, and whilst agreeing with Dr. Reznikoff in condemning diagnosis without treatment we must admit that treatment without diagnosis is apt to be the more dangerous. And even in Dr. Reznikoff's excellent paper it is possible to detect pitfalls into which the enthusiastic therapeutist may plunge unawares. In the opening paragraph we read that "everyone connected even remotely with the profession agrees that, whatever else the physician may be, he is above all a healer"—a sweeping statement with which many will flatly disagree. And when he goes on to say that "in the matter of therapeutics the future physician must . . . develop an emotional habit" besides a mental habit, he is inserting a line of divorcement between the departments of diagnosis and therapeutics which he has been elsewhere so anxious to weld into a consistent whole.

THE SELF-SUPPORTING HOSPITAL.

WILL the voluntary hospital continue to be voluntary, in the sense most of us at present attach to the word—that is to say, will it remain an institution, supported mainly by voluntary contributions, which gives free treatment to patients—or will it be replaced by the self-supporting hospital? This is the question which Dr. R. J. A. Berry, Professor of Anatomy and Dean of the Medical Faculty in the University of Melbourne, recently put to an audience in that city. Prof. Berry is well-equipped for discussing the subject, since last year he travelled 30,000 miles on a mission of inquiry into hospital and medical problems. The result of his investigations, as detailed in his address, was a strong conviction that the future is to "the medical centre devoted to community health" and its associated self-supporting hospital. He was "profoundly impressed" with this centre, as seen at work in the United States and Canada, and almost as profoundly dissatisfied with the voluntary hospital system of Great Britain which in the main he found, like the hospitals of Melbourne, to be "totally divorced from the pre-clinical and scientific laboratories of a medical school." Prof. Berry laid stress upon the right of the patient, whatever his means, to the benefits of institutional coöperation, coördinated medical knowledge, and individual service, benefits which, so far at all events as Melbourne is concerned, cannot be obtained to the full "in the present isolated hospitals, laboratories, and incomplete medical school" of the city. No one will quarrel with this claim, nor is there any expert at home who fails to recognise that the voluntary hospital is in a state of transition. That our hospitals are all so destitute of immediate association with medical education and laboratory research as he suggests cannot however, so readily be conceded. The connexion between university, medical school, and hospital is by no means unfamiliar, and the advantages of that connexion are so patent that the movement towards the medical centre, where it does not exist, has already begun. Such centres can be planted only in great towns, yet it should always be possible to affiliate to them those smaller local hospitals which often stand seriously in need of the practical experience and scientific help of the great institutions which exist as much for research and prevention as for curative purposes. The isolated individualism of our voluntary hospitals is a drawback which cannot but have an inimical influence upon their usefulness, and it seems inevitable that, sooner or later, we shall have something in the nature of hospital circles radiating from great scientific centres. The self-supporting hospital, which Prof. Berry found so frequently on the North American Continent, is really the voluntary hospital with a difference. It acquires self-respect by being relieved from the necessity of making constant appeals for money, and instils self-respect into those of its patients who are not actually indigent, by teaching them the unworthiness of expecting "something for nothing," an expectation which Prof. Berry has found widespread and resents. He enumerates the sources of revenue of the trans-Atlantic self-supporting hospitals as receipts from endowments which are sometimes considerable, since "no wealthy man dare die in the States without leaving something to his university, home-town, or favourite hospital"; payments for hospital services from middle-class and wealthy patients; payments from local authorities for patients unable to pay for themselves. Thus the occupant of every bed pays, or is paid for. The system is, in effect, a fusion between the voluntary hospital, as we know it (with or without "pay-beds"), and the poor-law infirmary, maintained out of public funds, with this important difference, that nobody is called by the absurd name of pauper. The bill, whether presented to the patient or the authority responsible for him, includes the medical fees which are paid over by the hospital to the medical consultant in charge of the case. If hospitals are to be open, as they already in considerable measure are open, to patients of all classes, that part of the voluntary system which implies the free services of the medical profession goes by the board. The institution of "pay beds" which is becoming so common is a recognition of the changed situation that has been forced upon hospital managers, but it may be found, in the end, to be no more than a palliative.

TRANSMISSION OF DISEASE BY AEROPLANES.

AN Australian correspondent draws our attention to some of the implications of the flight made by Kingsford Smith and his associates from San Francisco to Brisbane. New standards of rapidity in communication must have the effect, he points out, of bringing "the endemic centres of hitherto exotic disease" into dangerous proximity to Australia. Separated by long sea voyages from the primitive sanitation of the East, the Commonwealth has, up to the present, kept fairly free from Oriental infections; thus there has been no case of small-pox since August, 1921, and plague has not occurred since June, 1923. Cholera and yellow fever, indeed, have never penetrated Australia's quarantine barrier, an important factor in this happy state of affairs being the length of time that must elapse on the journey from an infected port. Plague and cholera are prevalent at Rangoon and Bombay, but during the voyage to Australia from these cities any infection is sure to manifest itself on board the vessel, as the incubation period is less than a week. By fast air transport, however, Rangoon is only 62 hours' journey from Australia. Small-pox, moreover, may not develop until 16 days after exposure to infection, within

which time, as Hinkler showed, it is possible to travel the whole way from England. The solution of the problem, our correspondent considers, cannot be quarantine; for who would travel 6000 miles in 84 hours in order to spend the following two or three weeks in a quarantine station? The only possible control, he believes, is by a scheme of quarantine surveillance, whilst vaccination and similar means of mass-immunisation will again have to be utilised to protect a community freshly exposed to risks which it has almost forgotten.

DEATHS UNDER ANÆSTHETICS FOR DENTAL OPERATIONS.

THE percentage of deaths occurring under anæsthesia for dental operations is extremely low, far lower indeed than for general operations; yet fatalities do occur and the number in any year is by no means negligible. The fact that the operation of dental extraction for which the anæsthetic is usually given is of a relatively trivial character, makes the occurrence of death from the anæsthetic employed peculiarly tragic. Our contemporary, the *Dental Surgeon*, has devised a questionaire which it is intended to circulate to those doctors and dentists unfortunate enough to have a fatal case, with a view to eliciting a body of information which may in time become large enough to provide valuable information. As the *Dental Surgeon* truly points out, the reports of such cases are usually of a meagre character and provide little material for forming a judgment as to the best general anæsthetic for dental operations and the conditions favourable or unfavourable to the patient's safety. The idea of such an inquiry is a good one, and we hope that the questionaire will be fully and carefully filled up. It has been so framed as to cover all the essential points, and there can be no doubt that if it should prove possible to collect enough data, knowledge would be gained which might be the means of reducing still further the number of deaths during dental operations.

EFFECTS OF A HIGH CARBOHYDRATE DIET ON LACTATION.

THE claim has frequently been made that starchy foods have a stimulating effect upon lactation, but no systematic study of the influence on breast-milk of supplementary nourishment by one particular starchy food being available, it was decided by three American workers to carry out a thorough investigation of this nature, and their findings were reported in a recent issue of the *American Journal of Obstetrics and Gynecology*.[1] The substances chosen were rice and tapioca, because of their similarity, because both are inexpensive, familiar in the ordinary home, and capable of being prepared in a great variety of ways, and because it has been asserted that tapioca is a galactagogue. A series of 130 lactating mothers in a hospital were divided into three groups, each patient being placed in rotation on her admission and all grossly abnormal cases being eliminated. Group I. received the regular hospital ward diet, and Groups II. and III. this same diet, except that the noon-day dessert was omitted and 60 g. of rice and tapioca respectively were added. A little later a fourth group was started, to whom fat in the form of cream of the same caloric value as the starchy foods was added to the ordinary diet. The hospital dietary had a caloric content of about 2600, the others being brought up to a total of about 3000 calories. The diet was begun 24 hours after delivery, under careful supervision. On the fifth and ninth days, as nearly as possible at the same time, one breast of each patient was completely emptied by electric breast-pump, and the milk analysed, and the babies were weighed for test feeds at the same hour each day.

[1] The Influence of Supplementary Feeding of Carbohydrate upon Lactation. By Israel S. Kleiner, Ph.D., John E. Tritsch, M.D., and Lulu G. Graves, B.E., New York City.

The most important feature of the results seems to be that the quantity of milk obtained by the ba was definitely higher in the two carbohydrate grou the average intake being 2·40 oz. in the rice grou 2·47 in the tapioca group, 2·01 in the cream grou and 1·84 oz. among those whose mothers were receivi the hospital diet. The differences are comparative small, but the most rapid growth after the fifth d was found in the rice and cream groups, and all thr classes with additional feeding regained their birt weights during the time in hospital in greater propo tion than the control series. The conclusions dra from the investigation are these: In all four grou the appearance of milk in the mother's breas occurred about the third day, and in all there was tendency for the protein to decrease and the sug and fat to increase from the fifth to the ninth da on the fifth day the sugar content was lowest Group I. and highest in Groups III. and IV. (tapio and cream), and by the ninth day the rice group al had milk containing a high percentage of sugar; t largest quantities of milk, as tested both by t breast-pump and by the weighing of infants befo and after feeding, were secreted by the rice a tapioca-fed mothers; the cream diet was the on one resulting in an increased fat content of the mi on the fifth day, but by the ninth day all grou showed about the same percentage of fat. The pra tical result would seem to be that, by yielding slightly larger volume and a higher lactose conte the increased carbohydrate diet supplies the bal with a greater fuel value than the ordinary diet.

The Clinical Interpretation o Aids to Diagnosis.

A Series of Special Articles contributed by Invitatio

IV.—THE INTERPRETATION OF REPORTS O SPUTUM.

BY S. ROODHOUSE GLOYNE, M.D. LEEDS, D.P.H. LOND.,
PATHOLOGIST TO THE CITY OF LONDON HOSPITAL FOR DISEAS OF THE HEART AND LUNGS.

(1) COLLECTION OF MATERIAL: PHYSICAL AND CHEMICAL CHARACTERISTICS.

Obtaining a Specimen.

A PATIENT who has sputum cannot be considere to have a normal respiratory tract, and it may b just as important to examine the sputum as it is apply a stethoscope to his chest. For practic purposes sputum may be regarded as secretion whic comes from the respiratory tract, the ciliated epith lium being assisted in their action by coughing "clearing the throat." It is not uncommon, hov ever, for saliva and stomach contents to be sent t the laboratory as sputum.

Sputum expectorated in the early morning befo food is best for bacteriological examination, and th patient should be asked to rinse out the mouth wit sterile water before expectorating the sample. Bloo clot, although complying with the definition sputum given above, does not as a rule give helpf information on bacteriological examination, excep in the relatively rare cases of broncho-pulmonar spirochætosis in which disease hæmoptysis may be prominent symptom. In cases of early pulmonar tuberculosis with hæmoptysis it often happens tha the patient has no sputum except for a few hours, perhaps a day, following the cessation of the hæm ptysis, when he may expectorate a few drachms. Th small quantity of sputum generally contains tuberc bacilli, and the opportunity of sending it to the labora tory should never be missed. Such an opportunity ma

ot occur again. Only a small quantity—a few rachms—of sputum is necessary for bacteriological xamination. A small fresh specimen sent to the boratory as soon as possible after expectoration is etter than a large accumulation of stale sputum ollected for a whole day. Autolysis takes place in putum allowed to stand, during the process of which ells soon degenerate and some pathogenic organisms ie out. Tubercle bacilli, however, survive many days fter autolysis is complete If a laboratory outfit be ot available the ordinary flat-sided bottle commonly sed for tablets and throat lozenges makes a suitable bstitute. The bottle should, of course, be sterilised efore use and in sending by post should be carefully acked and marked "pathological specimen." These irections may seem superfluous, but it is surprising ow often they are neglected by the patient.

Children generally do not expectorate readily, nd it may be necessary to instruct them how to ear the throat and bring up sputum. This is best ne by an adult demonstrating the process for them. ometimes a small particle of sputum may be picked f the pharyngeal wall by means of a throat swab. hen children with pulmonary tuberculosis swallow eir sputum the bacilli can frequently be found in the ces. Probably all patients swallow a certain amount sputum during sleep. Post-nasal secretion can be btained also by clearing the throat; failing that naceous secretion can be removed from the post-asal space by means of a swab and the whole sent the laboratory. When an examination of pus from accessory sinus is required the "wash out" may sent for examination, saline being used for the casion instead of the usual antiseptic.

A full report on a sputum examination would give description of:—

(1) Physical characters, whether foul smelling, ucoid, mucopurulent, purulent, or blood-stained.

(2) Chemical—the presence of albumin, bile, &c.

(3) The character of the cells, those found in fferent kinds of sputum being large squamous ithelial cells from the oro- and laryngo-pharynx, iglottis, and vocal cords, ciliated columnar cells from onchial epithelium, alveolar cells from lung substance oper, neutrophil leucocytes, eosinophils and lympho-tes. Malignant cells, pigment and fat containing lls are less commonly recorded.

(4) The bacterial flora.

(5) Any unusual substances, such as fibrin, amœbæ, irochætes, Charcot-Leyden crystals, or Cursch-ann's spirals.

(6) Virulence tests in suitable animals—the guinea-g for the tubercle bacillus, the mouse for the neumococcus and some strains of streptococcus.

A complete examination of this kind is, however, rely needed, and as a rule the pathologist presents a port only on (1), (3), and (4).

Physical Character.

Mucoid sputum, often greyish in colour from mixture with atmospheric dust, is generally found post-nasal catarrh, chronic pharyngitis, and onchitis. The chief characteristics of this kind of utum are the presence of large squamous and ciliated ithelial cells together with the so-called catarrhal ganisms, amongst which the Gram-negative . *catarrhalis* is usually conspicuous. Pneumococci e generally of the unclassified group IV. type and eptococci of the "salivarius" class. Growth is ually luxuriant and virulence for animals low. Mouth ganisms are common.

Mucopurulent sputum of the typical "nummular" pe is the common concomitant of pulmonary tuber-losis. The cells are mostly of the pulmonary veolar type, but the significance of these is rarely phasised in face of the much more important bercle bacillus.

Purulent sputum suggests septic bronchitis, ncho-pneumonia, pulmonary abscess, and gangrene, d bronchiectasis. In the last three conditions ntioned it is usually very foul smelling. The bacterial flora is generally very mixed; virulent types of pneumococci and streptococci predominate, but in the fœtid sputum of bronchiectasis and abscess all kinds of unidentified Gram-positive and negative organisms, often anaerobic, crowd the specimen, and mouth spirochætes are common. A report of large numbers of organisms of different kinds in a foul-smelling sputum is very significant of bronchiectasis.

The typical *sputum* of lobar pneumonia is "rusty" looking and sticky, and generally yields the pneumococcus in nearly pure culture. It must be borne in mind, however, that there are many aberrant forms of pneumonia, especially during an influenza epidemic, and these are often characterised by a mixed bacterial flora. In this case, however, the sputum is not typically "rusty" looking.

Blood-stained sputum may be traced to a variety of causes. In pulmonary tuberculosis the finding of the tubercle bacillus, and in broncho-pulmonary spirochætosis the presence of large numbers of spirochætes decide the diagnosis, but there are many cases where the examination of sputum will only yield indirect evidence in support of a diagnosis. In the first place, it is important to ascertain that the blood comes from the respiratory tract. Blood-stained sputum is generally frothy and has an alkaline reaction, blood from the stomach is usually not frothy and is darkened in colour from action of gastric juice, and if mixed with gastric contents the material is likely to be acid. Post-nasal bleeding may be associated with mucus or with muco-pus, or it may consist of pure blood, in which case there will be but very few cells except red blood cells. Post-nasal blood may be swallowed and then vomited. A microscopical examination of the cells in blood-stained sputum may help in showing bronchial epithelium, alveolar cells, pus, squamous pharyngeal cells, and the like. The presence of starch granules or particles of food may also assist in deciding on the source of specimen. In suppurative lung diseases such as bronchiectasis, abscess, and gangrene, blood-stained sputum and hæmoptysis are not uncommon. The great predominance of pus cells, the enormous number of bacteria, of mixed and often unidentified species, and the foul smell, are usually sufficient to clinch the laboratory diagnosis. In mitral disease with failing compensation the capillary oozing into the mucoid secretion often gives a characteristic pink tinge to the sputum. Later, streaks of blood may be present in the mucoid sputum. Infarct produces a much larger amount of blood and of a darker colour, but this is not sufficiently characteristic for diagnosis. Blood-stained sputum may follow operation or the administration of a general anæsthetic, and may be due to trauma, embolus, secondary infection, or the lighting up of quiescent pulmonary tuberculosis. A bacteriological examination for the tubercle bacillus and other organisms is important. Malignant disease of the lung is often described as producing prune juice sputum, but it is neither a helpful nor characteristic description. It should not be forgotten that the malingerer—especially if he has had experience in a sanatorium—can produce a very good imitation of blood-stained sputum from a small abrasion of the gum. Generally it is a more or less homogeneously coloured pink frothy saliva which contains practically no cells but red blood corpuscles. The malingerer will sometimes borrow sputum from another patient, especially if compensation or a pension claim be pending. When suspicion is aroused, the specimen sent for examination should be coughed up in the presence of doctor or nurse.

Chemical Tests.

The presence of *albumin* used to be considered indicative of pulmonary tuberculosis, but it is found in other inflammatory conditions and is not really very helpful as a diagnostic sign. *Bile* is found occasionally when liver substance communicates with lung by ulceration through the diaphragm, but it is more commonly due to the accidental admixture of stomach contents and sputum.

Special Articles.

SPORADIC DYSENTERY IN A LARGE CITY.

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Dysentery is no novelty in Newcastle. It was a frequent visitor in the eighteenth century, when its signs and symptoms were known and adequately recorded. In comparison with the carefully worded and meticulously studied description given by one of the city's physicians, Dr. Andrew Wilson, in his "Essay on the Autumnal Dysentery" in 1760, the accounts of the disease to be found in modern text-books are but colourless epitomes.[1]

One has only to read the graphic descriptions of those days to realise that the old-time clinician had a very definite conception of the cardinal features of the "bloody-flux," and of its existence as a separate entity, altogether different from cholera on the one hand and the simple diarrhœas on the other. From the fact that mention of hepatic signs and sequelæ is lacking, it is obvious that the condition then prevalent was a bacillary and not an amœbic dysentery. Later records are to be found in the Annual Reports of the Newcastle Dispensary,[2] and every year from its opening in 1771 until 1900 a number of cases passed through the books of that institution. In some years the disease was apparently epidemic—for example, in 1783 and 1785 when 329 cases with 17 deaths find record, but more generally the numbers are small. In some of the city's death returns during the nineteenth century dysentery can be separated from its companions—diarrhœa, zymotic enteritis, and intestinal catarrh—and during the ten years, 1874–83, 60 deaths were attributed to it. From 1901 until the war years the record, both of the dispensary books and the death returns is blank.

Under the regulations of 1919 dysentery became a notifiable condition and in that year ten cases, with one death, were so notified. The numbers gradually diminished until in 1924 there were none. In 1925 a group of cases, due to the para-Shiga organism mentioned later in this article, came to notice. These were followed in July of 1926 by a definite outbreak of six cases of so-called "food poisoning," from five of which a Flexner bacillus was isolated.[3]

History of the Present Series of Outbreaks.

In the first week of March of the present year three cases of a mild dysentery due to *Bacillus dysenteriæ* Flexner occurred in two related families, which, though normally residing apart, had been temporarily sharing the same home in Cowgate, one of Newcastle's newer suburbs. Recovery was uneventful in all these cases. During the last week of the same month and the first fortnight of April four sudden deaths in children, aged from 7 to 9, were reported, and each of these was subjected to post-mortem and bacteriological examination. In two of these cases the bacteriological findings were negative, and the deaths were recorded from the pathological evidence as being due to gastro-enteritis; in the other two cases it was ascertained that a bacillary dysentery had been the cause.

In view of this sequence of dysenteric infections, a circular was issued on April 18th by the medical officer of health for the city, requesting practitioners to notify any severe cases of acute enteritis which they might encounter in their practices. All cases notified were carefully investigated, and any with signs or symptoms suggestive of dysentery were removed to the City Hospital for Infectious Diseases. Stools, &c., were bacteriologically examined, not as a routine, but wherever the history of the case seemed to indicate its advisability. Up to June 30th, notifications from all sources had yielded 17 cases bacillary dysentery with two deaths. Of the 47 n dysenteric cases notified, four died, but only one v brought to post-mortem examination. In this, as the other three, death was returned under omnibus term of gastro-enteritis. For the per March 1st to June 30th there are thus records 22 cases of dysentery, all bacteriologically prov four of which have terminated fatally. These 22 ca have been found in 15 separate households. T sex and age-distribution of the cases were as follows

Thirteen, or 59 per cent., were in females, with one dea representing a female case mortality-rate of 7·7 per ce The remaining nine cases were males. Three died—a m case mortality-rate of 33·3 per cent. There were no ca under the age of 12 months, two were under 2 years, th in the age-period 2–5, ten from 6–10, one from 11–15, a six above the age of 20. Three deaths occurred in the a period 6–10, and one from 11–15.

Clinical Features.

Two very different types of the infection w encountered, the one mild from the beginning a simple dysentery—the other fulminant and fat suggesting the form of the disease known as ente dysentery.

Mild Cases.—The average length of stay in hospital ten non-fatal cases was 18 days, and this period was sufficie to cure symptoms, establish convalescence, and prove disappearance of the infecting organisms from the sto The ordinary clinical history is as follows: The onset gradual with headache, occasionally associated with vomiti Within a few hours diarrhœa commences, and generally first motions are loose and fæcal. The bowel is soon empt of fæcal contents, and thereafter the motions are alm pure mucus with varying quantities of blood. "Jelly a blood" is a graphic description of the motion frequen obtained by the history-taker, though the true red-curr jelly stool of dysentery has been seen only on one or t occasions. The diarrhœa is very frequent—every 20 30 minutes—40 to 60 stools in the 24 hours, and this st may last for four or five days, unless treatment has b adopted. Even after treatment has been commenced cessation of diarrhœa is gradual, and there is generally so looseness of the bowels with brown and grumous moti up to about the tenth day. Throughout the diarrh stage colicky pains are invariably present in greater or l degree, and are relieved by the passage of stools. Tenesm has been complained of in the majority of cases. Abnorm abdominal distension was not observed in any case. So indefinite tenderness over the pelvis is frequently elicit but pain on pressure over the descending colon was ne obtained. Enlargement of the spleen was only found one patient. Slight furring of the tongue is generally prese

The bronchitic signs described in Sonne infection by Aberdeen observers were absent in the few cases concerne The temperature is elevated—generally from 99°–100° in the evening, and about ½° less in the morning. Th is a progressive defervescence, and about the tenth d coincident with the improvement in the intestinal conditi the temperature is usually normal, and convalescence assumed to have begun. About two days after this bacteriological examination of another stool is commenc and by the time the report on this is available (i.e., five seven days) the patient is generally fit for discharge.

The latest date on which dysentery bacilli have been fou in the stools was the tenth day of the disease, but this o happened in one case, and as a rule they have rarely b obtained later than the sixth day—the first three days be the most favourable for their isolation. On two occasi when multiple clinical cases have occurred in a househo the stool has only been positive in one case, but the blo serum of another taken at a later date has agglutinated organism from the stool of the positive case in high diluti There have been no relapses in hospital, nor, as far as co be ascertained by routine inquiry, after discharge. Tre ment has been largely symptomatic, and sodium sulph in doses of from grs. 40–60 three times a day has been adop as a routine in the first four or five days.

Fulminant Cases.—In this type of the disease, the ons development of symptoms, and death have followed another so swiftly that the average duration of such a c has been less than 24 hours. The onset is extremely sudd and as in the mild type headache has been comm vomiting, moreover, has been an invariable sympto Colicky pains and diarrhœa with mucus and blood h followed. The number of such stools has usually b relatively few—perhaps about ten or a dozen—and th appearance was that of a mixture of fæcal material, blo

nd mucus, rather than the "jelly and blood" characteristic of the mild type of the disease. Abdominal distension, tenderness, and rigidity of the muscles on palpation were not present in any of the cases. The spleen was never found to be enlarged on clinical examination.

In two cases only have temperature records been obtainable, and in these the pyrexial reaction was higher (101°–102°) than in the milder type. Drowsiness, passing into coma, has preceded the fatal issue. In general it may be said that these fatal cases have been associated with a degree of toxic infection altogether out of proportion to the symptoms.

Post-mortem Appearances.

Post-mortem examinations which were made in all the fatal cases showed the same general pathological appearances in every case.

In every case there has been an enteritis and a colitis—the former condition predominating. The inflammatory changes have been most marked in the lower one-third of the ileum, though in one case it was the upper part of the jejunum which appeared to be chiefly affected. Engorgement of the blood-vessels in the wall of the gut has been the principal external sign, and the peritoneal reaction has never gone beyond this hyperæmic stage. Internally there has been evidence of a folliculitis, passing on to follicular ulceration. The Peyer's patches in the main have not been affected.

There have been no signs of chronic thickening of the bowel wall, but recent œdematous changes have been constant. The condition of the colon has generally been similar to that of the intestine though in a minor degree. A slight gastritis was present in some of the cases. A presumably acute lymphadenitis of the mesenteric glands was found in one case, and the spleen was definitely enlarged in another. Toxic changes were invariably present in the heart, kidneys, and liver.

The results of the bacteriological examinations of fæces, blood, and post-mortem specimens will be considered later.

Epidemiological Features and Spread of the Disease.

Distribution and Chronology of the Outbreaks.—The 22 cases recorded occurred in 15 separate domiciliary outbreaks. There were ten outbreaks made up of single cases; three multiple groups of two cases each; and two where three patients were affected. The chronological order and date of commencement of each of the outbreaks is given in Table II. Cases and outbreaks occurred in nine of the 19 wards of the city (population 288,500), but although there has been multiple incidence in certain wards, in no instance have there been two outbreaks in one street. In fact, after the closest investigation and interrogation of all facts and persons concerned, it may be said quite definitely that there has never been any known contact between one affected family and another, either domestically, scholastically, or otherwise.

Water.—The water common to all these cases for the purposes of drinking and ablution was that of the Newcastle and Gateshead Water Company, a supply obtained from upland sources, stored, filtered, and chlorinated. It is usually of high quality judged both by chemical and bacteriological standards. Samples of water taken from each house without sterilisation of the tap were satisfactory in all but five. In three of these *B. coli* were present in 1 c.cm.; in two specimens in 10 c.cm. In no case were streptococci present. Neither the series of outbreaks as a whole, nor any individual focus presented the features of a water-borne epidemic, and in view of this and the known possible viability of *B. dysenteriæ* under saprophytic conditions, little significance is attached to these findings of dirty waters, though to a certain extent they act as an index of the general hygienic standard of the dwelling.

Milk.—Only in five cases was fresh milk an article of diet in the household. In four cow's milk was used, in the remaining one goat's milk. The milk had been boiled in only one instance. The purveyors of these milks were all different, and as far as could be ascertained the sources of supply were entirely independent. In the remaining cases tinned milks were in regular daily use, and the patronage of the various brands appears to have been very catholic, no fewer than ten different varieties being consumed.

Milk products, &c.—In view of the variety of brands of butter and margarine used there is nothing to suggest their relationship to the outbreaks.

Ice-cream.—A history of eating ice-cream was only given in two of the outbreaks. In each of these cases—one of which proved fatal—it had been consumed the day before the sickness commenced, and had been obtained from diverse sources.

Prepared meats.—Brawn, potted meat, galantine, &c., were not eaten by any of the patients affected. Two patients in separate outbreaks gave a history of eating respectively corned beef and tinned tongue. These meats came from different shops, and in both instances were partaken of by others who suffered no ill-effects.

Shell-fish.—One fatal case had a few whelks on the day of the onset of illness. Others similarly indulging in the same and adjacent houses were unaffected.

Watercress, salads, unwashed fruits were not implicated in any of the outbreaks.

Flies were a negligible feature of both domestic and outdoor life during the period under review.

Epizoötics.—Careful inquiry was made as to the degree of rodent infestation of the affected houses. This was negligible, nor was there any evidence of any epizoötic, such as might be shown by the presence of dead rats or mice, or diarrhœic indications of an intestinal complaint.

Sanitary conditions were fairly good. Water-closets were fitted on all the premises, and dry refuse was removed periodically under corporation arrangements.

Contact with other cases or carriers.—As has been stated above, there has been no evidence of any contact between one infected household and another, either directly or through intermediaries. In two instances an apparently healthy member of the household gave a history of a previous attack of dysentery, one in South America in 1913, the other while serving in France in 1916. Neither of these persons had anything to do with the preparation of the family's food, and their stools when examined were negative for the dysentery group.

One incident remains to be recorded for what it is worth. From a small domiciliary group of three cases an agglutinable Sonne dysentery bacillus was isolated. One patient—a boy of 11—died, and the other two, though attacked at the same time, manifested only the very slightest symptoms. About six weeks prior to this a playmate of the boy had died suddenly in the flat above, with symptoms suggestive of dysentery. The macroscopic appearances at post-mortem examination were those of entero-dysentery, but unfortunately the specimens obtained were useless for bacteriological purposes, and accordingly this case has not been included in the present series. The only suggestive facts are that the father of this latter boy had suffered from diarrhœa on the day of his son's death, and that he had but recently returned from Glasgow—a Sonne infected area. His stools when tested at a later date were negative.

Overcrowding.—The houses affected were a rather less than average sample of the dwellings occupied by the working classes of the city. Some were tenement property in comparatively poor neighbourhoods, others were modern habitations recently constructed under corporation town-planning schemes. On a standard of two persons per room, 51 of the total number of 94 inhabitants were overcrowded, a percentage of 54, compared with the average overcrowding of 33·6 per cent., which held in Newcastle at the time of the 1921 census. The relation between overcrowding and the incidence of diseases of the diarrhœa type does not require to be emphasised here.

Climatic conditions.—There was nothing exceptional in the climatic conditions for the time of the year.

Up to this point these cases of bacillary dysentery have been treated as if one, and only one member of that group of organisms had been the cause of the whole series of focal outbreaks. The bacteriological evidence, however, shows that no fewer than five types of dysentery bacilli, or of organisms so closely allied as to be grouped with them, have acted as the "materies morbi" in these cases.

Bacteriological Data.

Only the essential features of these laboratory findings will be recorded here, as they form the material for a bacteriological review of the outbreaks, which is in course of preparation by the investigators concerned.

A brief statement of the standards adopted as diagnostic, and an enumeration and distribution of the organisms implicated, are, however, necessary for the purpose of this article. All examinations of clinical and post-mortem material were carried out in the Routine Department of the University of Durham College of Medicine Bacteriological Laboratory by or under the direction of Dr. F. H. A. Clayton.

1. Every case of dysentery in this series was a positive bacillary case in the sense that (*a*) an undisputed dysentery-causing bacillus was obtained from

its stools, or (*b*) its blood-serum agglutinated not only a standardised emulsion of a dysentery organism, but also an identically similar organism found in the stools of another patient in the same household.

2. As a result of these investigations the following five organisms have been discovered amongst the 22 cases of dysentery :—

(*a*) Three out of the five commonly accepted serological types of *B. dysenteriæ* Flexner—namely, W, Z, and one which agglutinated X and Y strains equally and is in consequence referred to as XY. Type V was not found in the present series.

(*b*) A Sonne bacillus, and an inagglutinable variant of the same.

(*c*) A so-called para-Shiga organism. This designation was applied because it is not agglutinated by Shiga serum, although it shows the fermentation reactions of that organism, causes dysenteric symptoms, and has been isolated from a fatal case. A very similar, if not identical, bacillus was isolated from a case of clinical dysentery in Newcastle in September, 1925, and in May of this year from an outbreak of about 20 mild cases of the disease in the Cripples Home at Gosforth, one mile outside the boundaries of the city. A description of this organism is being published by Dr. Clayton and Dr. S. H. Warren, of the University Laboratory. Neither of these other foci could be associated in any way with the two cases in the present series.

It is important to note that wherever multiple infections have occurred in a household, the type of the causal organism has remained the same for all the cases therein.

TABLE I.

Type of organism.	Flexner.				Para-Shiga.	Sonne.
	V.	W.	XY.	Z.		
Organism isolated from stools	—	3	2	4	—	3*
As above, and agglutinated by patient's own serum ..	—	—	—	2	—	—
Blood-serum, tested against standard Oxford emulsion, and/or organism from case in same household	—	—	—	3	1	—
Organism isolated from P.-M. material	—	1	1	—	1	1
Totals	—	4	3	9	2	4

GRAND TOTAL .. 22 cases in 15 outbreaks.

* 1 inagglutinable.

Flexner W caused 4 outbreaks, XY 2, Z 6, para-Shiga 1, Sonne 2.

Table I. gives the distribution of the five organisms amongst the 22 cases, and also shows the sources from which they were obtained.

Table II. is included as a matter of interest. It shows the chronological order of the 15 outbreaks, their dates, neighbourhood, and the type of the infecting bacilli. It demonstrates, amongst other things, that the first seven outbreaks sprang up in different wards ; that there were never two consecutive outbreaks in the same ward, and where one type of organism was implicated in successive outbreaks the infected localities were, of course, not the same.

The interrelations of the various dysentery bacilli are still somewhat ill-defined. It would appear to be generally accepted that Shiga and Sonne are distinct organisms, with well-marked serological and biological properties which they hand on through many generations. On the other hand, the fermentation reactions of the Flexner group, though of considerable importance, are not quite reliable enough to be used alone for purposes of differentiation. Accordingly, bacteriologists have developed their already considerable knowledge of the more stable distinguishing features of these several organisms, which could be found in their reactions to immune sera. These agglutination tests do not invariably yield clear-cut and definite lines of demarcation between the five or more strains—V, W, X, Y, Z, &c.—into which the Flexner group has been subdivided serologically, but they are sufficient for most practical purposes.

Whether in course of time these serological type alter and change one into another is not known. A any rate in the present investigation wherever multipl cases have occurred in houses there has been n

TABLE II.

Serial No.	Ward.	Type of organism.	Date.	Serial No.	Ward.	Type of organism.	Date.
1	F.	Z.	Mar. 2	9	W.	Z.	May 1
2	S.	XY.	,, 24	10	Arm.	Sonne.	,, 2
3	J.	W.	,, 27	11	F.	XY.	,, 3
4	W.	W.	Apr. 25	12	W.	Sonne.	June
5	Ben.	Z.	,, 28	13	Ben.	Z.	,, 1
6	Anth.	Z.	,, 28	14	Byk.	Z.	,, 1
7	And.	W.	May 7	15	W.	Para-Shiga.	,, 2
8	J.	W.	,, 9				

Abbreviations for Wards.—And., St. Andrew's ; Anth., St. Anthony's ; Arm., Armstrong ; Ben., Benwell ; Byk., Byker ; F., Fenham ; J., St. John's ; S., Stephenson ; W., Westgate.

evidence of such transmutation of type. Nor is there any reason to believe that what holds good fo these multiple cases does not similarly apply to the single cases throughout the series.

Discussion.

In considering these 22 cases an attempt was first made to regard them simply as " bacillary dysenteries " without differentiating the type of causal bacillus. For a time it was convenient to imagine them as arising from one source, and following in one sequence. But on further scrutiny not only was it necessary to recognise the diversity of the infecting organisms, but also that there was no definable factor common to all the cases, and that there was nothing wherewith one could connect them together in a consecutive series. Arranged in five groups corresponding to their causal organisms, these outbreaks still failed on the most careful investigation to divulge any other common feature which might facilitate an understanding of the incidence and spread of the disease. And, finally, the attempts made to link up any individual outbreak with another have proved unsuccessful.

Relying on the evidence available, and allowing as auxiliary predisposing factors the obvious overcrowding, and the proved facilities for easy contamination of water and food which arise under these conditions, one is reluctantly compelled to admit that apart from the thesis that these outbreaks of dysentery are certainly a sporadic, and possibly an endemic manifestation of the disease, there is no other explanation easily acceptable at the moment. How exactly the disease arises, and what part intermittent carriers and the even more dangerous latent case, as described by Cunningham, have played in the spread of the disease it is impossible to say. The amount of material at one's disposal is not sufficient. It would appear an entirely feasible hypothesis that in certain cases following upon some dietetic indiscretion, the quiet " carrier " has become actively dangerous, perhaps even personally ill, and that other cases in the same household, some of acute dysentery, others of transient diarrhœa, have been the result. Sporadic dysentery in itself is nothing new ; it has been described in this country by many observers, amongst others by Saundby in Birmingham (1906),[5] Bainbridge and Dudfield in Paddington (1911),[6] and Severn and Evans in Smethwick (1928).[7] The interest of the present series lies in the variety of organisms at work, and in the way in which the sporadic elements have become so frequent as to attain the dimensions of an endemic.

Several questions arise—many of which cannot be answered at the present moment. They are, nevertheless, stimulating in their suggestion of fresh avenues of inquiry. It will be remembered how Creighton pursued the records of dysentery across a century, and found cases which were at one time well and truly recorded as " griping of the guts," later

masquerading as "convulsions." [1] And probably in a measure the same is true to-day. Diarrhœa, the "omnibus" diagnosis, has no doubt regained the allegiance of many of the dysenteries, and ulcerative colitis, a comparative newcomer, may have acquired some of the remainder. A search of the death returns for the last six years, under the headings of dysentery, diarrhœa, and the allied diseases, has given for Newcastle a limited amount of "data," which on strict statistical inquiry and analysis may show whether this sporadic or endemic dysentery is a normal feature of life and death in Newcastle. But apart from these retrospective inquiries, extensive observations on normal living material are necessary. What percentage of the ordinary population intermittently excrete dysentery bacilli in their stools? How many people are there with well-marked agglutinins for the dysentery group in their blood? The former percentage would give us some idea of the number and significance of the dysentery carrier; the latter figure should show the extent of past infection. These data have been obtained before but separately, or from communities (e.g., mental hospitals) which cannot be accepted as normal. The work of Schorer,[8] Ritchie,[9] and Pickworth [10] along these lines urgently requires to be extended.

Other questions, not so important perhaps, but equally fascinating come to mind. If this is not a true endemic, is it the beginning of an epidemic? Are these sporadic foci due to five types of bacillus, the first potential centres of an epidemic outbreak? Why should five types of organisms have simultaneously made their presence so manifest? Have these organisms been with us all the time, and is there now some failure of the natural immunity of certain members of the population? Have the protective properties of the bacteriophage become enfeebled? Has there been some transmutation of certain forms of bacterial life? The main object, however, of this article has been to draw attention to the series of cases of dysentery which have occurred in Newcastle, in the hope that other observers may enquire whether such a condition of affairs is present elsewhere.

My acknowledgments and thanks are due to Prof. Harold Kerr, medical officer of health of Newcastle-upon-Tyne, for permission to publish this report, and for much interest and assistance in its preparation.

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BUXTON MEDICAL RESEARCH SOCIETY.—At a meeting held on Sept. 7th at the Devonshire Hospital Mr. J. Race, biochemist to the hospital, communicated the result of an analysis, made by Dr. Judd Lewis, of the gases issuing from St. Anne's Well, showing the rare gases to be ·20 per cent. of the total volume, made up of argon 6·6 per cent. and helium 3·4 per cent. The absence of neon is an interesting feature of the analysis, as it appeared to exclude atmospheric air as a source of the helium and afforded a sharp contrast with the gas at Bath which, like atmospheric air, contained considerably more neon than helium. The output of radium emanation in the gas had been estimated at 3000 milli-micro curies per hour. Seeds baked in the radio-active Buxton water germinated quicker and grew more rapidly than in either tap water or in a natural water practically identical in composition with the Buxton water but free from radium. The waters, he said, were all adjusted to the same pH before use.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Unequal Distribution of Doctors.

A RECENT publication shows how many medical men there are in the six central European States which derive all or part of their territory from the old Austro-Hungarian Empire. From the data given, which were compiled for other purposes, the following figures may be quoted as indicating the unequal distribution of practitioners in these countries:—

—	Population.	Practitioners.	No. of inhabitants per practitioner.
Jugoslavia ..	12,000,000	2100	5700
Roumania.. ..	16,000,000	3000	5300
Poland	7,000,000	2200	3200
Czecho-Slovakia ..	13,500,000	6800	1970
Hungary	8,000,000	5400	1480
Austria	6,500,000	7300	900

This makes it painfully clear that the situation of the medical profession in Austria is worse than in any of the other States; even wealthy Czecho-Slovakia, with more than double our population, has far fewer doctors to compete with one another than there are here. Austria's poverty and economic depression obviously justify the authorities in their endeavour to prevent or diminish the matriculation of medical students.

The Principal Causes of Deaths in Vienna.

From the report of the Vienna Board of Health for the first half of this year it appears that tuberculosis no longer holds first place among the causes of mortality. Pulmonary tubercle—the other forms do not play a significant part in these statistics—was responsible in 1918 for 22·5 per cent. of all deaths in the city, and in 1920 for 18·6; but by 1926 the percentage had fallen to 13·7, and in the past six months it has been only 12·3, which is very gratifying. No doubt the decline is due to the remarkable improvement in housing effected by the present municipal government, and also to instruction of the public concerning the hygienic importance of light and air, and the necessity for isolating phthisical patients. Further, the increase of tuberculosis centres and sanatoriums has a very beneficial effect upon "open" cases. Thus it comes that diseases of the heart and circulation now take precedence over tuberculosis as causes of death. Whilst it is by no means certain that these pathological conditions have absolutely increased in Vienna, their prevalence may be an after-effect of the war, now becoming more distinctly manifest. This is probably true of wear-and-tear diseases such as arterio-sclerosis.

Doppler's Method of Reactivating Viscera.

For some three years, as I have already mentioned,[1] Dr. Karl Doppler has been making extensive use of a method of reorganising visceral blood-supply, based on a technique devised by Leriche for increasing the circulation in paralysed legs. On dividing the sympathetic nerves accompanying the blood-vessels of the limbs, and thus destroying the vaso-constrictor branches, Leriche obtained improvement, albeit temporary, in the circulation, and Doppler's technique is based on his observation that a similar result can be got by painting the adventitia of the blood-vessels with a 7 per cent. solution of phenol. He first tried this method in a case of badly healing gastric ulcer and the result was promptly satisfactory. Then he used it wherever it seemed desirable to stimulate a too sluggish blood-supply, and it is true that he—and many other surgeons who used his carbolic solution—got very good results. Encouraged by these experiments, Doppler started using the method for increasing

[1] THE LANCET, 1928, i., 467.

the blood-supply, and thus promoting the functional activity, of the testes and ovaries. For this process he strictly repudiates any use of the term rejuvenation. He calls it a " regenerative " method, and together with Prof. Hans Lorenz—not the orthopædic surgeon—he has used it in a large number of cases, in which the effect has undoubtedly been very beneficial in certain respects, whilst the operation itself is very simple and easily performed. A distinct return of muscular strength and mental activity, with growth of hair and even return of its normal colour, has been observed by many surgeons. The duration of the effect is not yet known; as a rule, it seems to be two years at least, although sometimes repetition of the operation has been required within that period. There are also, of course, refractory cases, and the treatment cannot be expected to do much good if the organ under stimulation has been irreparably damaged so that its glandular tissue has atrophied. Attempts have so far been made to reactivate the liver, the kidneys, the ovary, and the testes; experiments are now going on with regard to the thyroid and suprarenal glands. The physiological basis of the method is now thoroughly understood. The carbolic solution destroys—much better than a knife—certain nerve-tissues, and at the same time sets up a process which prevents the formation of new nerves after the original destruction, at any rate for two or three years. The 7 per cent. solution acts chiefly on the vaso-constrictors, the vaso-dilators being much more resistant. The method is now being widely tried all over Vienna, but results are not being given to the public as Dr. Doppler wishes to make certain of his facts as far as possible before making further claims.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

A Medical Register for India.

NEWSPAPER reports that the Government of India intend to bring before the forthcoming session of the Central Legislature a Bill to regulate medical education in India by the establishment of a Medical Council and the maintenance of a Medical Register have evoked mild protest from the Bengal Medical Association and one or two other quarters. More than one medical circle has declared that the time has not yet come for the establishment of an Indian Medical Council, and that it would not be easy to control provincial medical councils by a centrally constituted organisation.

The question whether there is need for setting up a central organisation has been engaging the attention of medical faculties and other such associations for at least a decade. Indeed, it has been revived and pressed upon the Government more than once since 1919, but apparently the Government have hitherto not been kindly disposed to the demand. Possibly their want of sympathy was due to the fact that all provincial governments were not of one mind on the question. It has, in fact, been stated in a well-informed quarter that three of the local governments were against the proposal. This, and perhaps the usual financial difficulties, might have stood in the way of the Central Government taking any bold step, but events since then have been distinctly in favour of a definite forward move.

The Bill which has now been prepared by the Government of India can be said to be a comprehensive measure which aims at making India autonomous in regard to medical qualifications based on the Western system. Its object is said to be the creation of a Central Council which will establish a uniform standard of qualification in medicine for all provinces so that holders thereof may be empowered to practise throughout British India, and it will be the sole authority to regulate, on a footing of reciprocity, the conditions on which qualifications acquired abroad are to be recognised in India.

Bengal's Poor Health.

The deterioration of the public health of Bengal is emphasised in a recent address by the Director of Public Health of the province. For this state of affairs improper and inadequate food is largely responsible. The annual mortality for the province is about a million and a half, and deaths of children under the age of 15 make up no less than 50 per cent. of the total. In 1927 no fewer than 120,000 people died of cholera in Bengal; the mortality from malaria was 350,000; reported deaths from enteric vary annually between 50,000 and 100,000, while deaths from tuberculosis total about 100,000. In all probability there are at least half a million sufferers from tuberculosis in the province. The infantile death-rate is appalling, and on the average 55,000 newly-born children die of tetanus every year.

Dangerous Drugs.

There is every likelihood of the Government of India introducing a Bill in the autumn session of the Central Legislature regarding dangerous drugs. This Bill is rendered necessary in view of certain obligations undertaken by the Government under the Geneva Dangerous Drugs Convention of 1925. It is not known at what stage the Bill is now, but it will be published in the *Gazette* shortly before the commencement of the September session. As, however, the measure in its application will concern a large number of provinces in India, it is likely that soon after the introduction in the Legislature a motion will be made for circulating the Bill to local governments for opinion. This means that further progress will not be made till the next winter session in Delhi.

Wild Animals.

The total number of persons returned as killed by wild animals (other than snakes) in British India during the year was 2285, as against 1955 in the previous year and 1962 in 1925. Tigers were responsible for 1033 of these deaths, leopards for 218, wolves for 465, bears for 78, elephants for 56, and hyenas for 12. Deaths were highest from tigers and leopards in Madras, from wolves in the United Provinces, from bears in Bihar and Orissa, and from elephants in Assam. Of 423 deaths from " other animals " about 136 are assigned to crocodiles, 85 to wild boars and pigs, and 41 to jackals. The highest number of deaths from all wild animals occurred in the Madras Presidency (579), the United Provinces, Bihar and Orissa, and the Central Provinces and Berar coming next in order. During the year 25,612 wild animals were reported as having been destroyed, including 1368 tigers, 4390 leopards, 2739 bears, and 2439 wolves.

Deaths from snake-bite decreased from 19,724 to 19,069, the number of snakes destroyed in India proper increasing during the same period from 46,012 to 57,116.

MEDICINE AND THE LAW.

Dangerous Drugs Regulations.

ATTENTION was recently drawn [1] to the Order in Council which at last brought into operation the Dangerous Drugs Act, 1925. That Act provided a new definition of the drugs to which Part III. of the 1920 legislation applied, and another Order in Council of the same date applied Part III. to certain specified preparations. The Home Secretary has now made two sets of regulations dealing with these preparations. The first set regulates the manufacture, supply, possession, &c., of benzoyl-morphine under licence. The other extends the Dangerous Drugs Regulations of 1921 to dihydro-oxycodeinone and dihydrocodeinone and their respective salts, and requires that separate registers (or separate parts of the register) be kept in respect of these preparations. These two recent sets of regulations are what is called Provisional

[1] THE LANCET, Sept. 1st, p. 475.

egulations. This name merely implies that, on rtified grounds of urgency, the Home Office is ıtitled to make the regulations without giving the ual 40 days' notice of his intention under Section 1 the Rules Publication Act of 1893, and without aiting to collect the observations of persons inter- ted upon his proposals. The Provisional Regula- ons have meanwhile (and until the Regulations are ade, after the full preliminaries of notifying inten- on and collecting criticisms, as Statutory Rules and rders) just as complete validity as if they were Statutory " and not " Provisional."

A Promising Advertisement.

A cutting from a Malayan newspaper contains ı advertisement (with portrait) of a " Burmese ecialist," giving an address in Kuala Lumpur, who, ıving had 35 years' practice at Rangoon, begs to otify the public that he is able to cure a number specified diseases. The list ranges from hiccough, arseness, and indigestion to madness, paralysis, thma, and leprosy. " Persons affected with evil irits or charms could be released; guarantee to re diabetes within two months." The announce- ent may not be taken seriously by western readers, ıt can we say that similar advertisements have tirely disappeared from the columns of English wspapers? Parliament has prohibited them so far they relate to venereal disease; they might be, ough they seldom are, the subject of criminal oceedings in so far as they incite to or abet abortion. herwise there is nothing—except the general read of education—to restrict the advertisement of omised cures. The vendors' descriptions of patent edicines seldom understate their claims.

An Osteopath Prosecuted.

But while an eastern journal publishes such an vertisement, the eastern courts may be found king proceedings against a development which is tirely western. A Kuala Lumpur newspaper of ly 30th records the prosecution and conviction at lombo of Mrs. Starr for practising osteopathy—or, be exact, for having during April and May last, actised medicine and surgery for gain without ving registered herself as a practitioner under dinance 2 of 1905. Mrs. Starr, described as a anipulative therapist, had, it appears, given treat- nt of a kind associated with the practice of osteo- thy. Her counsel argued that the treatment was sort of massage, neither medicine nor surgery, that assage is not a branch of surgery but an aid to rgery, and that consequently the manipulative eatment given (in the case charged a manipulative eatment of the spine) did not offend against the dinance. The magistrate examined various dic- nary definitions of osteopathy. He observed that assage was undoubtedly an aid to medicine and rgery, but remarked that osteopaths worked on a fferent plane. They claimed to diagnose and remedy sease; their methods were more drastic and far- aching than those of the masseur. The osteopath not so much a humble auxiliary of the qualified actitioner as a substitute and sometimes even a al; he is not an assistant but a principal. Osteo- thy, said the magistrate, is a particular branch of anipulative surgery; Mrs. Starr practised surgery administering manipulative treatment. He fined r the nominal sum of 25 rupees, having taken into count the facts that she had practised her profes- n openly for some years in Colombo and elsewhere thout interference or objection, that she was stated have given relief to certain patients where qualified ctors had failed, and that she might have been gally entitled to practise in other parts of the rld, and therefore possibly was unaware of the dinance under which she was being prosecuted. e magistrate then added certain general observa- ns of considerable interest. The legal position, said, seemed to be that the practice of osteopathy s not proscribed in Ceylon, but that only practi- ners qualified and registered as physicians and surgeons could practise osteopathy. " I think it would be true to say that the medical profession admits in theory the great value of osteopathy, a branch of manipulative surgery, in the treatment of certain injuries in carefully selected cases; but it is probably also true that no members of the medical profession in Ceylon are qualified osteopaths." The practical result was that, at the moment, if any patient in Ceylon had an ailment which could only be remedied by osteopathic treatment, he or she could not obtain such treatment. There was, however, another important consideration. It had been alleged that Mrs. Starr was treating her patient for infantile paralysis when in fact the ailment was malaria. The judicial medical officer had attested that the patient died of heart failure from excessively high temperature due to malaria. His final pronouncement summed up the position clearly. " What in any event is obvious, is the great danger that exists in allowing a person, unqualified save in one particular branch of surgery, to attempt to diagnose every type of disease and ailment; it is unreasonable to suppose that the one remedy of manipulative surgery is a suitable prescription for every type of disease, and the great danger that lies in the prescription of such a remedy where it is unsuitable is patent."

The Services.

ROYAL NAVAL MEDICAL SERVICE.

H. L. Pridham to be Surg. Lt.

The following appointments have been notified:—Surg. Comdrs.: H. B. Padwick to *President* for post-graduate course; and R. A. W. Ford and J. C. Sinclair to *President* for R.N. Medical Store Depôt, Deptford, for survey of stores. Surg. Lts.: E. J. K. Weeks to *Victory* for R.N. Barracks, Portsmouth; and H. W. Strong to *Fisgard*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. D. A. Imrie to *Victory* for R.N. Hospital, Haslar, for training.

Surg. Lt. (D.) E. D. Collins to *Vivid* for R.N. Barracks, addl. for training.

Surg. Sub-Lt. D. S. Buchanan promoted to Surg. Lt.

Proby. Surg. Sub-Lt. H. E. Holling and R. H. Wheeler to *Victory* for R.N. Hospital, Haslar, for training.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. R. L. V. Foster retires on retd. pay.

Majs. to be Lt.-Cols.: G. S. Wallace, vice Lt.-Col. B. B. Burke, promoted; C. J. Coppinger, vice Lt.-Col. R. L. V. Foster.

W. D. Hughes to be Lt. on prob.

TERRITORIAL ARMY.

Lts. W. S. C. Copeman and K. V. Milburn to be Capts.

ROYAL AIR FORCE.

Flying Officer J. Hutchieson is granted a permanent commission in this rank.

Flight Lt. (Hon. Squadron Leader) G. S. Ware relinquishes his temporary commission on completion of service, and is permitted to retain the honorary rank of Squadron Leader.

DEATHS IN THE SERVICES.

Col. Llewellyn Thomas Manly Nash, C.M.G., R.A.M.C., retd., who died on Sept. 9th at the Queen Alexandra Military Hospital, Milbank, London, aged 67 years, received his medical education at the Royal College of Surgeons, Ireland, and at the Rotunda Hospital. He was appointed surgeon in the R.A.M.C. in 1885, and served with the Miranzai Expedition in India (mentioned in despatches and medal with clasp) and also with the Hazara Expedition (clasp). He reached the rank of major in 1897, and that of Lt.-Colonel in 1905. In the late war he took command of No. 8 General Hospital at Rouen in August, 1914, and was later A.D.M.S. of the 8th Division (twice mentioned in despatches and created C.M.G.). In 1915 he returned to England, owing to ill-health, and was subsequently appointed to headquarters in the Eastern Command. At the end of 1916 he organised the R.A.M.C. centre at Blackpool with marked success. In 1917 he was appointed A.D.M.S. in Sussex. His genial disposition and tactful manner brought him many friends in civil as well as military life who will deeply regret his death. Col. Nash married in 1901 Edith Gertrude, daughter of the Rev. Charles Sloggett.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT CARDIFF.

(*Continued from p. 578.*)

SECTION OF LARYNGOLOGY AND OTOLOGY.

CHRONIC ETHMOIDITIS.

Dr. ROSS SKILLERN (Philadelphia), in his opening paper, said that chronic infections of the ethmoid could be broadly divided into suppurative and non-suppurative. With regard to the suppurative variety, the exudate varied from a thin watery to a thick yellow discharge, and this variation occurring in the same case, while the patient attributed it to the acquisition of fresh colds, was really due to exacerbations of his chronic condition. The discharge at times became so thin and scanty as to lead the patient to believe that a cure was in process. The final result, however, was a constant purulent secretion.

The *non-suppurative type* was characterised by polypoid formations unaccompanied by true leucocytic pus. This hyperplastic ethmoiditis, while distinct pathologically from the suppurative variety, did not preclude a combination of both types. In fact, the probability of suppuration was in direct proportion to the extent of hyperplasia. Saprophytes were more likely to find a suitable growth medium when polyposis was present. The *suppurative type* might be subdivided into suppuration affecting the anterior cells or the posterior or a combined suppuration of anterior and posterior. Suppuration of the anterior cells as an individual entity did not exist save with one exception. He had not seen this condition apart from accompanying affection of the frontal sinus. The exception referred to was infection of the bulla ethmoidalis, and even then an abscessed bulla was often associated with infection of other cells. Infection of the posterior cells was more frequent, because they were larger and more numerous, and they were so situated as to be less amenable to aeration. Their drainage could easily be interfered with by a slight swelling of the mucosa and their situation prevented easy exact diagnostic instrumentation. So slightly were they disturbed by inspiratory air currents that they offered an excellent medium for microbic growth. The combined anterior and posterior infection was usually an acute infection in contra-distinction to the gradual insidious infection of the separate anterior or posterior cell types. The *hyperplastic types* varied from a slight degeneration of the lower border of the middle turbinate, to the formation of large sessile polypi. Actual polypi appeared to originate from the body of the ethmoid or the uncinate process. He had never seen a large polyp originating from the lower border of the middle turbinate. The anterior labyrinth was the seat of large extracellular hypertrophies, while in the posterior labyrinth the intracellular variety was the rule. The so-called choanal polyp sprang from the mucosa of the maxillary antrum. In old chronic cases the entire ethmoid became converted into one mass of polypoid degeneration. In such cases there was a profuse watery secretion, which did not stain linen. Staphylococcic infections appearing in cycles produced thick yellow secretions. The true combined form only became permanent when the organisms found lodgment deep in the mucosa.

Treatment had for its basic principles aeration and drainage. Complete removal of all infected tissue was unnecessary. At one time he was prone to overdo the removal. Drainage was the duty, while ventilation, although desirable, was not indispensable. Oftimes haphazard procedures only left an area of debris, which degenerated into a disorganised suppurating mass. In simple catarrhal infection, removal of the middle turbinate was almost a sine qua non; first, to permit thorough aeration, and secondly to make possible the application of medicaments. In some cases he had found it necessary to resect part of the septum, so that the middle turbinate could n longer swell and compress the ethmoid. Five da after removal of the turbinate tampon treatment w instituted. Cotton tampons saturated with a 10 20 per cent. silver preparation, dissolved in equ parts of water and glycerine, were used and allowe to remain in situ at least five hours. The solutio should be warm and freshly made. The tampo at first were used every other day, and later wit decreasing frequency. Suppuration in the anteri cells often required that the frontal sinus should l cleared of infection. An abscessed bulla could l treated by opening its floor. Suppuration in th posterior cells was difficult to detect even with th nasopharyngoscope, but one clue was always at han and that was the hypertrophied and mottled appea ance of the middle turbinate. In treatment th middle turbinate should be removed, and obvious diseased cells should be opened up, following whic the tampon treatment should be carried out. Su puration of the entire labyrinth required a comple exenteration. In doing so, the preliminary remov of the uncinate process with a flat chisel was advisabl After this had been done the posterior cells could l methodically resected. It was well to leave th part of the inner wall of the ethmoid which house the olfactory nerve filaments. This was done rath to preserve the sense of smell than to obviate th development of meningitis via the cut filament Silver tampons as an after-treatment were admirabl

Treatment of Hyperplastic Ethmoiditis.—Localise hyperplasia (polypi) was treated with a snare, and was strongly advisable to resect the bony attachme of the polyp. In generalised hyperplasia of th anterior and posterior labyrinths, complete remova as far as possible, of the degenerated tissue was calle for. Here the Mosher and Sluder operations we indicated. Intranasal operations demanded an int mate knowledge of anatomy, but even so there w no anatomical configuration of the ethmoid cells constitute a normal model. In consequence of the variations, certain deep-lying cells often escape attention, and that was why the ultimate resul were not all good. Nevertheless, he was convinc that the intranasal operation offered the lea dangerous, if not the most facile, opportunity the patient for relieving him of his distressing an ofttimes dangerous infection.

Mr. W. G. HOWARTH (London) classified chron ethmoiditis into catarrhal and suppurative varieti He was of opinion that the catarrhal type in its ear stages might respond to treatment by simple lava and hygienic measures, but these were of little u if there was deep infection. He emphasised th importance of aeration and drainage and strong advised the removal of the middle turbinate. T suppurative variety might be treated by morcelleme of the cells after preliminary removal of the turbinat but he thought the labyrinth could not thorough be cleared out by an intranasal operation. I preferred to approach it via the extranasal rout which he had used for 15 years. It gave a bett approach to the ethmoid and was not dangerou Even this method, however, did not expose all th ethmoid cells in certain cases.

The PRESIDENT (Dr. D. R. Paterson, Cardiff) ma a plea for conservative treatment. He mentione cases in which, for various reasons, radical measur had not been attempted. These cases had be treated along conservative lines, such as the period removal of polypi for many years. Looking ba on these cases he had no reason to be dissatisfied wi the results.

Mr. E. B. WAGGETT (London) thought that antrit usually coexisted with ethmoiditis, and that failu to cure the antral trouble was due, in many case to an infected bulla. Snipping off the bulla w always worth while.

Mr. HERBERT TILLEY (London) stressed the impor ance of the use of the endoscope as a means of dia nosis. The antra should be explored in every ca of chronic catarrh. He thought there were cases

thmoiditis in which neither suppuration nor polypoid ormation occurred.

Dr. WILLIAM HILL (London) spoke of the difficulty f complete exenteration of the labyrinth, and pointed ut the difficulty of dealing with cells extending into he wings of the sphenoid. He did not advocate the outine use of multiple exploration punctures.

Dr. P. WATSON-WILLIAMS (Bristol) said that while he suppurative and non-suppurative varieties were linical entities, they were but expressions of the same athological process. The variations depended upon he virulence of the infecting organisms and the atient's own resistance. He suggested the use of accines on tampons, and to this end specimens of us should be obtained by means of suitable cannulæ. With regard to operative measures, he favoured ntranasal methods. The middle turbinate should e conserved as far as possible. It at least served s a guide for the removal of the ethmoid cells.

Mr. W. S. SYME (Glasgow) believed that ethmoidal isease was often more extensive than it at first sight ppeared. Exploration of the antra was essential, nd in most cases an intranasal operation sufficed.

Mr. C. A. SCOTT RIDOUT (Portsmouth) advocated he external nasal operation. He pointed out the equency of pain between the eyes in infection of he posterior ethmoid cells.

Mr. J. B. HORGAN (Cork) believed in mutiple xplorations, and recommended approach to the thmoid cells via the antrum. He had found iodised henol of service in cases where the capsule of the thmoid had been broken into during operations.

Dr. G. M. COATES (Philadelphia) referred to the se of vaccines in chronic infection. American ractice did not place any great reliance on their irtues.

Dr. LOGAN TURNER (Edinburgh) expressed the pinion that the external operation was based on ound surgical principles. While meningitis resulting om infection conveyed along the olfactory nerve laments could not be very common, it did ndoubtedly occur. Specimens illustrating it could e seen in the Edinburgh Museum.

Dr. SKILLERN, in reply to a question, stated his reference for local anæsthesia.

Dr. WATSON-WILLIAMS read a paper on a case of ptic Neuritis due to Sphenoidal Sinusitis, which was eated by differential exploration. He pointed out hat anatomical variations of the sinuses frequently ade diagnosis difficult. In his case the patient had true undeveloped left sphenoidal sinus. This had ecome infected and the patient had developed optic euritis. The infected sinus was found by a process f differential diagnosis, in which cannulæ were used. he method of use was demonstrated by lantern ides. He mentioned that the patient's optic euritis had much improved when he was subsequently examined by Dr. D. Leighton Davies.

DRAINAGE OF BRAIN ABSCESS.

Sir PERCY SARGENT, in opening the discussion, ferred to the special features of brain abscesses. hese were the type of tissue involved, the presence cerebro-spinal fluid, and the pressure conditions ithin the cranial cavity. There was also the frequent existence of other conditions to be considered—g., meningitis, ventricular ependymitis, and sinus lebitis. Four types of abscesses could be recogsed: (1) diffuse septic softening; (2) a pus-containing vity with a ragged wall; (3) a cavity with a thin psule of young fibrous tissue; (4) a cavity contained dense fibrous tissue perhaps an inch in thickness. In the first variety, which was really not an abscess all, no surgical treatment was likely to be of any e, save perhaps simple decompression. In the cond class drainage might be successful. The ird and fourth types differing only in the thickness the capsule, merged imperceptibly into one another. round the thin-walled abscess there was an area œdematous brain along which extension might ke place and by which route the ventricle might become involved. In the thick-walled abscess the changes in the surrounding brain were insignificant. Their proper treatment was complete enucleation followed by closure of the wound without drainage.

The commonest type of abscess was probably that represented by Type 3. Most of these were of otitic origin and situated in the temporal lobe or cerebellum. Cerebellar cases, because they usually gave earlier indications of their presence, were more likely to be operated upon at an earlier stage. He commented upon Macewen's series of cases and his astonishingly low mortality-rate. This latter, he thought, was due to the fact that Macewen's cases consisted of definitely encapsulated abscesses with a long history. These cases did not lend any support for early operation, but in the speaker's opinion early operation ought to be undertaken as soon as an abscess was diagnosed. The dangers of delay were: rupture into the ventricle, acute spreading œdema, and, especially in cerebellar abscess, sudden respiratory failure.

If an abscess were imperfectly drained, the ventricle which contained fluid under pressure might rupture into the abscess and lead to the escape of cerebro-spinal fluid from the wound. If properly drained, the intracranial pressure fell. The appearance of a fungus cerebri—i.e., a protruding mass of strangulated necrotic tissue—was indicative of unrelieved pressure. The route of approach and the method of drainage were of prime importance. The "stalk" of the abscess, representing the inward track of infection, was the ideal route of approach. In otitic cases during a mastoid operation the "stalk" might fortunately be found, and it was possible that the drainage thereby established might be adequate.

Failing the finding of the "stalk" a transarachnoid route must be used. After the skull had been opened the subarachnoid space should be packed off with gauze before the pus was evacuated. This guarding plug might be left in for two or three days.

A subcortical abscess was usually indicated by bulging of the brain with pallor and broadening of the convolutions. These appearances were lacking in deep-seated abscess, and exploration with the trocar and cannula was to be deprecated. He was accustomed to use a small flat seeker, with which the resistance of an abscess wall could be felt. Having located the abscess he tied off all necessary cortical vessels, and then he incised the abscess with a knife. The material of the drainage-tube was of little importance provided it was sufficiently rigid. He had used aluminium and celluloid tubes. The tube should be sutured to the dura or skin and kept clean by syringing. It should be shortened very gradually, and there was always a tendency for some œdema to push it out. This could be tided over by lumbar puncture.

Mr. SYDNEY R. SCOTT (London) spoke of the routes of infection in brain abscesses of otogenic origin. A cerebral abscess might develop via the tegmental, the labyrinthine, or the venous route, and cerebellar abscesses originated from the antrum, the sigmoid sinus, or the labyrinth. Regarding methods of opening the skull, he preferred the use of a broad sharp gouge and a heavy hammer. The gouge should be used parallel to the surface. He deprecated the use of blunt probes in the case of acute abscess. A short pointed knife was advisable. If thick pus was present a dilating forceps was useful. For enucleation purposes he used a spoon and forceps. Drainage was not always necessary as in the case of a small superficial abscess. He said that the use of a suction apparatus was sometimes desirable, but demanded great care. In concluding, he spoke of the value of manometric records as an aid in controlling pressure.

Dr. E. D. D. DAVIES (Stonehouse) pointed out that drains might sometimes be harmful. They might be a source of trauma or secondary infection.

Mr. E. B. WAGGETT (London) suggested exploration with the finger. Once the abscess had been located by an instrument, the latter should not be removed until the drain had been inserted.

Dr. WILLIAM HILL asked why the prognosis of frontal abscess was so bad compared with that of temporo-sphenoidal abscess.

Mr. HUGH E. JONES (Liverpool) thought that possibly the close relationship of the anterior horn of the ventricle to a frontal abscess was the explanation. He raised the question of ventricular drainage, where drainage of the abscess was not enough.

Mr. T. R. RODGER (Hull) suggested that it might be advisable to delay operation on a cerebral abscess so as to permit of encapsulation.

Dr. COATES (Philadelphia) said that the mortality-rates in his country were approximately equal to those in this. He disliked rapid drainage.

Sir PERCY SARGENT, in reply, spoke of the size of the cranial opening. It should always be of sufficient size, a mere trephine opening was not sufficient. A contralateral decompression was of use for the relief of pressure. Ventricular puncture, while useful, was transient in its effects. Hypertonic saline injections were efficacious, but their effects should be carefully watched, for there was a danger of the brain falling away and thereby opening up adhesions. He had no experience of a two-stage operation, nor of gauze drainage, and the latter might be harmful.

INJURIES OF THE EAR ARISING FROM FRACTURE OF THE SKULL.

Dr. E. D. D. DAVIES remarked that in view of the increasing frequency of motor and street accidents, the aurist's point of view was of particular importance. The aurist was usually called in some weeks after the accident to treat deafness, or in connexion with compensation matters. He would be able to give a more accurate estimation of the damage, and treatment might be facilitated, if he were called in soon after the occurrence. Most fractures of the base involved the middle fossa, and this was to be expected, since a line of weakness extended through both Glaserian fissures and the Eustachian tubes to the foramina lacera media, between which was the sphenoidal sinus. The halves of the skull were more or less cemented together by the basi-occipital and the basi-sphenoid, and the fracture usually followed this weak line. The roof of the tensor tympani canal and Eustachian tube and that of the tympanum and antrum were usually involved in fractures along this line.

The extent of the injury varied with the violence, and the site where the blow was applied. Spicules of bone from the tegmen were sometimes found in the auditory meatus. The middle ear was almost always damaged in surviving cases, while the internal ear was rarely fractured. The external meatus was often fractured when the line was through the Glaserian fissure. It appeared to split longitudinally into an upper and lower half. (A specimen showing this was exhibited.) A crack in the roof of the meatus was more common. Where great force was applied, the fracture might extend from the upper or anterior surface of the petrous bone into the internal meatus. A smashing blow might knock off the mastoid and injure the lateral sinus. Fractures of the posterior fossa began in the cerebellar fossa, radiated into the sinus groove of the same side, and then passed either along the inferior petrosal sinus groove or across the petrous pyramid, through the cancellous bone surrounding the antrum and semicircular canals and behind and external to the internal meatus. A blow on the temporal fossa had cracked the roof of the middle ear, and blood had escaped into the tympanum without rupturing the drum. No blood was found in the meatus, but the drum had a bluish appearance. In four such cases the only indication was deafness, and the injury would not have been detected without an aural examination. In such cases posterior rhinoscopy would occasionally show blood in the orifice of the Eustachian tube. Hearing was completely recovered in these four cases in three weeks. Usually, however, the upper half of the drum was ruptured, and blood escaped into the auditory meatus. Leaking of cerebro-spinal fluid indicated the opening-up of the subarachnoid space, and all such cases he had seen had been fatal. Cerebro-spinal fluid also escaped in fractures involving the internal ear.

Profuse and prolonged bleeding from the ear pointed to rupture of the middle meningeal artery or the lateral sinus, and urgent operation was called for. The meatus was sometimes a vent for extradural hæmorrhage and ought never to be firmly plugged. The lateral sinus was rarely ruptured, and the increased intracranial pressure sufficed to arrest bleeding. Hæmorrhage from both ears had a mortality of 66 per cent., while from one ear it was 39 per cent. The average mortality of all cases of fractured base was about 40 per cent.

The presence of pre-existing middle-ear suppuration made meningeal infection very probable. Local suppuration sometimes followed the injury, and materially added to the damage. Mastoid suppuration occasionally followed a fracture, and was liable to lead to meningitis. Some cases of local suppuration, if seen late, could not be distinguished from ordinary chronic middle-ear suppuration, hence the importance of examination soon after the accident. In compensation cases the history of absence of deafness and ear disease previous to the injury should be carefully verified.

Facial paralysis occurred in abour 46 per cent. of fractures of the middle fossa. In a few cases the eighth nerve was involved as well. The facial nerve was injured in the facial canal, particularly near the geniculate ganglion. Paralysis set in almost immediately, save in some cases where it was due to hæmorrhage into the canal. Recovery in these latter cases was more rapid. All cases he had seen had recovered, even after long intervals.

The degree of deafness arising from fractures was very variable. Some showed no deafness. A case seen 12 months after injury, in which the sixth, the seventh, and part of the third nerve had been paralysed, revealed only slight middle-ear deafness. Suppurative cases suffered most loss of hearing, and this loss became permanent. Any improvement which occurred usually took place within eight weeks of the injury. He had not seen genuine ear deafness arising from concussion alone, or from a fracture showing the signs he had described. Probably all subjects of injury to the internal ear died.

The treatment was not always masterly inactivity, and a watch should be kept for the onset of suppuration. Absolute rest in bed for a long period was essential, and the less done to the ear the better. The head should be raised. The meatus should be gently cleansed with spirit, and sterile wool frequently changed should be placed lightly in the orifice. If there was a discharge of cerebro-spinal fluid, the skin should be dried and smeared with antiseptic ointment. Packing with gauze, syringing, and the use of drops were to be deprecated. If suppuration arose, free drainage should be established. The drum should be incised if necessary, and a simple mastoid operation should be carried out at the slightest indication. The operation should be done gently, and preferably by burr or drill to avoid the jarring of the mallet and chisel. Early recognition and treatment of suppuration were essential, to prevent meningeal or intracranial infection.

SECTION OF HISTORY OF MEDICINE.

NATURE AND TREATMENT OF DROPSY.

Mr. WALTER G. SPENCER presiding, Dr. J. D. COMRIE (Edinburgh) discussed the historical aspect of ideas regarding the nature and treatment of dropsy. From the earliest times, he said, dropsy was recognised as a morbid condition and was for long regarded as a disease sui generis due to liquefaction of the tissues. The ancient Greek physicians attributed it chiefly to a disorder of the liver, and hardening of the organ was regarded as the principal cause by the Alexandrian school of medicine. Galen regarded the defective action of the heart which was

often an accompaniment of dropsy as an effect rather than a cause. In the eighteenth century Morgagni drew attention to the frequency with which the heart was found to show valvular defects and other disorders in cases of dropsy, but did not carry the matter further. Withering, who introduced the use of digitalis in 1775, recognised that only certain cases of dropsy were amenable to treatment by the drug. He described as the type of case in which the dropsy was chiefly benefited persons showing symptoms which were now recognisable as being those of advanced cardiac disease, although the means of diagnosing valvular disorder were not at the time available to Withering. In the beginning of the nineteenth century Corvisart followed by Laënnec placed the diagnosis of cardiac disease on a sure foundation and showed that dropsy was frequently simply a sequel of this type of disease. The recognition of kidney disease as a cause of dropsy was first made early in the nineteenth century when Wells, Blackall, and others pointed out the fact that the presence of albumin in the urine was a prominent feature in certain dropsical cases, and these observations were placed on a sure footing by Bright in 1827. A further group of cases in which neither the heart nor the kidney was found to be at fault was demonstrated by Gull and Ord in the seventies of last century to be due to atrophy of the thyroid gland and to be of a different nature from simple watery œdema.

The PRESIDENT dealt with the surgical aspects of dropsy, particularly omentopexy.—Prof. J. A. NIXON sketched the history of war œdema or famine œdema, the first reference to which was to be found in Hesiod's "Works and Days."

WELSH PHYSICIANS AND THE RENAISSANCE.

Dr. E. ROLAND WILLIAMS (Maenchochog) gave an account of those Welsh physicians of the sixteenth century who had claims to be remembered not only as physicians but also as pioneers of the new learning in other fields of knowledge. The earliest and greatest of these was Robert Recorde, of Tenby (1510–58), who was not only a physician of repute but also one of the great mathematicians of the sixteenth century. To him was due the invention of the sign of equality (=) and the popularisation of the signs plus (+) and minus (−). He was the author of a treatise on anatomy and of "The Urinal of Physick," which laid down the classical canon of uroscopy. Humphrey Llwyd, of Denbigh (1527–68), was another physician notable for the breadth of his culture and his pioneer work in new fields of knowledge. He was the author of "The Judgment of Urine," published posthumously in 1553, which was a kind of therapeutic index and guide to dispensing. Llwyd was devoted to music and was an industrious and erudite writer on Welsh history and antiquities, but his work on geography formed his chief contribution to the new learning. Many prints of his maps were still extant. One of the early translators of the classics into English was the physician, Thomas Phaer, who rendered nine books of the Æneid into English verse and was also the author of two medical works, "A Goodly Brief Treatise of the Pestilence" and the "Regimen of Health." Several of the contemporary Welsh grammarians were physicians who sought relaxations from the cares of practice in what one of them called "the anatomy of language." The most picturesque, typical, and learned of these was John Daffyd Rhys, of Llanfaethlu, in Anglesey, who graduated as doctor of physic at Sienna and wrote two grammatical treatises in Italian, one being an "Introduction to the Study of Latin" and the other a "Guide to the Pronunciation of Italian." He subsequently returned to Wales and practised in Brecknockshire where he died in 1609. During the last period of his life he wrote a Latin treatise on Welsh grammar and prosody, and published a Welsh translation of Aristotle's metaphysics.

Dr. J. D. ROLLESTON (London) emphasised the importance of Thomas Phaer whom Prof. J. Ruhräh had called "the father of British pædiatrics."

HISTORY OF SCARLET FEVER.

Dr. Rolleston said that not only in the remote past but until comparatively recent times it was often almost impossible to disentangle the history of scarlet fever from that of other acute exanthemata, especially measles and erysipelas on the one hand, and diphtheria on the other. An attempt had been made by some writers to trace back the history of scarlet fever to classical antiquity and even to identify it with the pestilence at Athens in 430 B.C. Some passages in Hippocrates had given rise to the belief that the father of medicine was familiar with scarlet fever, as he described an illness accompanied by a severe sore-throat though he made no mention of a rash. The mere existence of ulcers on the tonsils, however, did not justify the diagnosis of non-eruptive scarlet fever. The same objection applied to passages in Celsus, Caelius Aurelianus, Aretæus of Cappadocia, and Aetius of Amida supposed to refer to scarlet fever, whereas diphtheria was probably the disease in question.

The Arabian physicians such as Avicenna, Ali Abbas, and Rhazes had also been credited with allusions to scarlet fever, but their descriptions were too vague to be interpreted as such. The first undoubted reference to scarlet fever in medical literature was made by Ingrassias (1510–80), who, in a work published at Naples in 1553, described a disease popularly known as Rossalia, or Rosania, which he distinguished from measles. The next most important writer on scarlet fever was Baillou (Ballonius) who, under the title of Rubiolae, described the principal varieties of the disease from his observations on a severe epidemic in Paris in the winter of 1574–75. Jean Cottyar, of Poitiers, a contemporary of Baillou, also gave an account of the disease under the name of "febris purpura epidemialis et contagiosa." A much more important writer was Daniel Sennert (1572–1637), who was the first to describe scarlatinal desquamation, the early arthritis, and post-scarlatinal dropsy and ascites. The epidemic which he observed at Wittenburg was severe and often fatal, and convalescence was protracted. Sennert's son-in-law, Michael Doering, observed an epidemic in Poland in 1625 and also noted the desquamation, rheumatoid pain, and anasarca as well as the inflammation of the tonsils and surrounding parts.

The term scarlatina was generally supposed to have been first introduced into medical literature by Sydenham, who published his brief account of the disease in 1683, six years before his death. The mild character of scarlet fever at that time was shown not only by his statement that it was hardly worthy the name of a disease, but also by his omitting any mention of the sore-throat or of the complications of rheumatism and dropsy described by his predecessors. In spite of his inadequate description, Sydenham was to be credited with having established the autonomy of the disease and given it a name to distinguish it from the other acute exanthemata, especially measles. His contemporary, Richard Morton, however, maintained that scarlet fever and measles were exactly the same, although unlike Sydenham he described a malignant as well as a mild form and expressly mentioned inflammation of the fauces in the acute stage and alluded to dropsy and ascites as sequelæ. He was also the first writer to mention the occurrence of scarlatinal otitis. In spite of Morton, Sydenham's distinction of scarlet fever from measles was accepted by subsequent writers.

The occurrence of scarlet fever in Scotland was first described by Sir Robert Sibbald, physician to Charles II. and President of the Royal College of Physicians of Edinburgh, in his work "Scotia Illustrata," published in 1684. During the eighteenth century numerous epidemics occurred throughout Europe and the United States and were described by Huxham, Fothergill, and Withering in England, Storch and Zimmermann in Germany, Plenciz in Austria, De Haen in Holland, Rosen von Rosenstein in Sweden, Tissot in Switzerland, and Benjamin

Rush in the United States, where the disease first appeared in 1735. During the eighteenth century there was a tendency to confuse scarlet fever with angina maligna, which was not finally established as a distinct disease until 1821 when Bretonneau gave it the name of "diphthérite." During the last 30 years of the eighteenth century there was a considerable increase in the incidence of scarlet fever, epidemics of which occurred in England, France, Germany, Italy, Holland, Sweden, Denmark, and North America. The epidemics were mostly mild, but one in central Germany, which lasted from 1795 to 1805, was attended by an unusually high mortality.

At the commencement of the nineteenth century malignant and extensive epidemics were followed by periods of lesser prevalence and low mortality, as shown by the experience of Graves in Dublin and Bretonneau in Tours, who differentiated scarlatinal angina from diphtheria. His doctrines were developed by Trousseau, who drew attention to the characteristic tachycardia and frequent occurrence of miliaria, and gave an account of the "formes frustes" (defaced types) of the disease. In the course of the nineteenth century several parts of the world which had hitherto escaped received their first visitation of the disease, such as Madeira (1806), South America (1829), Greenland (1847), Australia and New Zealand (1848), and California (1849). The mortality from scarlet fever in England was very high for at least 50 years after the introduction of registration in 1838, the maximum being reached in 1863. During the last 50 years the mortality had shown a steady decline in England in striking contrast with that in Eastern Europe, especially Poland, Bulgaria, and Roumania.

In conclusion Dr. Rolleston alluded to the advances in our knowledge of the ætiology, prophylaxis, and treatment of scarlet fever since the war.

Welsh Physicians in the Middle Ages.

Dr. P. Diverres (Swansea) said that the first medical treatise in Welsh known as the Meddygon Myddfai (the physicians of Myddfai) was probably composed in the thirteenth century. The compiler did not make use of folk medicine, but borrowed freely from Latin authors of repute in that line and in particular from the Secretum Secretorum. With the exception of the Welsh Laws references to physicians were very scanty in mediæval Welsh literature. There were, he said, no allusions to a school of medicine such as existed in the Middle Ages on the continent, but he believed that each physician trained some pupils who were often, perhaps in most cases, his sons or near relations. It was noteworthy that Gerald, the Welshman whose work was so full of interesting details, made no mention of physicians—an omission not likely to have occurred if medical practitioners had been numerous in his time. The Welsh Laws, which in their present state dated from the thirteenth century, only mentioned the Court Physician who was one of the 24 officers of the Court. He was one of the three persons allowed to have private intercourse with the King without the presence of the judge of the palace. He was never allowed to leave the palace without the King's permission. He was expected to give his professional attendance gratuitously to all the officers of the palace, receiving only by way of fees the blood-stained clothes of the patient. If, however, he had to attend to one of the three deadly wounds (blow on the head penetrating the brain, stab in the body penetrating the intestines, and fracture of one of the four limbs) he was to receive one pound without his food or nine score pence with his victuals. In war time the Court Physician was obliged to accompany the armies. According to contemporary medical texts most diseases were treated with remedies made of herbs, but in some cases other kinds of treatment were known such as ligatures, cauteries, and baths.

History and Lore of Cinchona.

Mr. C. J. S. Thompson (London) discussed the history of cinchona during the past 300 years from the traditional, the empirical, and the chemical aspects. He dismissed as unfounded the stories told by Geoffroy and La Condamine of the discovery of the febrifuge properties of cinchona by natives. The first authenticated record of the therapeutic value of cinchona bark was in 1638, when the wife of the fourth Count of Cinchon and Viceroy of Peru contracted intermittent fever and made a rapid and complete recovery after taking powdered bark which had been sent her by the Corregidor of Loxa who had himself been cured of an attack by this drug. When the Countess returned to Spain in 1640 she took with her a quantity of bark which she distributed among those suffering from fever on her husband's estates. In 1653 Chifflet, physician to the Archduke Leopold of Austria, wrote a report on the drug and its introduction into Europe. Contemporary physicians differed as to its value. Although many admitted that it palliated the fever, they insisted that it "fixed the humour," thus causing a relapse of some other dangerous disease. It was known at the time as *pulvis Jesuiticus* because the Jesuit fathers used to administer it, or more commonly as *pulvis Peruanus*. In 1670 the Jesuit fathers in Peru sent considerable supplies to Rome, where the methods for using it were explained to a congress of Jesuits. The bark was first known in England in 1655. Brady, then professor of physic at Cambridge, was one of the first to prescribe it, but its general introduction was largely due to Robert Talbor, who made his name and fortune by exploiting it as a secret remedy. In 1677 Peruvian bark first appeared officially in the London Pharmacopœia under the name of Cortex Peruanus. Until the beginning of the nineteenth century cinchona was still used in the crude state, and it was not until 1810 that Gomez, of Lisbon, obtained the acute principles of cinchona, the basic properties of which he called "cinchonino." In 1820 Pelletier and Caventou showed that cinchonino consisted of two distinct alkaloids, one of which they called quinine and the other cinchonine. In 1833 Henry and Delandre isolated quinidine, in 1844 Winckler discovered cinchonidine, and Pasteur produced the alkaloidal derivatives, cinchonicine and quinicine. Since the discovery of quinine 30 alkaloids have been found to occur naturally in cinchona bark, and from these there had been many derivatives.

SECTION OF TROPICAL MEDICINE.

Human Helminthiasis.

Dr. P. H. Manson-Bahr presiding, Lieut.-Colonel Clayton Lane read a paper on recent advances in the diagnosis and treatment of human helminthiasis. He dealt with the various fæcal egg-counting methods which, for estimating the output of helminth eggs, dated from 1885, and for the control of diagnostic techniques and the estimation of the extent and degree of individual infection in a community from 1918. The means used, he said, should fit the end in view; the diagnostic technique of direct centrifugal floatation (D.C.F.) could detect the presence of a single female hookworm normally ovipositing, was the only technique capable of mass usage, and was the simplest, most rapid, and most accurate available for hookworm, and probably for other common nematode infections where eggs appear in a host's fæces. It fulfilled an aim he had set before himself over ten years ago and since steadily pursued. Diagnosis by culture and extraction of hookworm larvæ was untrustworthy and might well miss the most active, and therefore most dangerous, larvæ. Trapped cultures must be used. "Creeping eruption" probably indicated intradermal wandering of a larva in an uncongenial host.

The principle of the Casoni skin sensitisation reaction for hydatid had, said Dr. Lane, been applied by Fülleborn to strongyloides infection, where it was invariably positive if the infection had lasted more than 18 months. Positive reactions with ascaris antigen appeared to be independent of ascaris

nfection. Hamilton Fairley had shown that comple-ient deviation had marked value as a test for ydatid and schistosome infections. In appraising he damage done by infection arbitrary selection of ests was worthless. Tests must be such as really ieasured any disability produced. The most romising and controllable were those which dealt ith the same persons before and after disinfestation, nd there was reassuring evidence that such tests, ealing with general mortality, morbidity, and wage-arning capacity, were coming into their own again.

In treatment the perfect anthelminthic was yet o seek. The value of intravenous emetine and artar emetic in schistosomiasis was established; yet Hamilton Fairley had shown that they were not arasiticidal in themselves, but were changed in the ody into something which was; similarly, santonin ppeared not to be toxic to ascaris, but to become so nder the action of bile. Allusion was made to the ersisting and lethal error which confused Schüffner's dvocated dosage for oil of chenopodium of 48 drops om the international dropper, or 1·2 c.cm., with 3 minims or 3 c.cm. As to carbon tetrachloride, the rug with "no lethal dose," which was claimed to use, in every million, but a few deaths, "and those nong the ones who could best be spared," it was ointed out that, while 3 c.cm. was the advocated dose, eath had followed 1·5 c.cm. of the pure drug, and metimes many deaths. The precautions now dvocated as possibly effective in preventing these eaths precluded the employment of the drug on a ass scale.

Dr. Lane drew a sharp contrast between mass eatment, which implied previous individual diagnosis, nd herd treatment which "drenched" men promis-uously like cattle, and it was urged that since D.C.F. ermitted four men to make an individual diagnosis garding hookworm infection at the rate of a quarter a million specimens or more yearly, herd treatment nd no justification in morality, science, or expediency. for the purposes of herd treatment there were lopted a drug, unforeseeably deadly in less than the dvocated dosage, the advocated precautions against hose lethalness were inapplicable in herd conditions, en such adoption must in future imply disregard of ofessional obligations to those treated and deliberate ursuance of a course devoid alike of reason and manity.

Discussion.

The PRESIDENT said he had found in the long-needed curacy of diagnosis now afforded by D.C.F. a luable clinical advance, for his clinical experience as positive that no infection with ankylostomes, wever small, should be neglected on its own account as an important because harmful complication in her diseases. In his own hands, under conditions taining in hospital in England, carbon tetrachloride d proved a safe and effective drug in scores of cases hookworm infection. There was, however, great ed of standardisation of anthelminthics.

Prof. E. HINDLE had noted, as a result of periodical amination of fæces of unselected patients in Cairo, at many got rid naturally of their hookworm festation without any treatment. Prevention of nfection was therefore of chief importance.

Dr. C. M. WENYON thought that the main objection herd treatment without diagnosis appeared to lie the unforeseeable lethalness of one of the drugs used. scovery of a safer, yet effective, anthelminthic uld remove that objection.

Dr. B. M. WILSON described the anti-hookworm mpaign in Jamaica. There a sanitary unit dealing h village sanitation in general and latrines in rticular took charge of the selected area, and after eir work was well established the treatment unit gan theirs. This plan was based on the fact that atment was largely wasted unless reinfection could prevented. Deaths after carbon tetrachloride had curred in Jamaica, and there thymol was now the ug of choice—an effective one—against hookworms.

Dr. H. M. HANSCHELL recounted his experience of success of D.C.F. in revealing very small anky-lostome infections where other not more time- or labour-saving technique had failed to do so. In certain of his cases of secondary syphilis proving unexpectedly resistant to treatment discovery by D.C.F. and expulsion by thymol of the small number of hookworms present had been followed by rapid clinical and serological response to the same anti-syphilitic treatment. Carbon tetrachloride was a proved potent liver poison. It should not, therefore, be given to a purged and fasting patient unless sufficient glucose were given at the same time. For the same reason, to protect the liver, glucose should be given with antimony drugs also.

Dr. J. B. CHRISTOPHERSON held that antimony acted directly on the schistosome, though possibly not as antimony tartrate, but perhaps in an organic combination. There was no evidence that action of the drug on body tissues produced an "antibody."

Dr. Manson-Bahr read a communication from Dr. F. G. CAWSTON, of Natal, reporting success in treating "creeping eruption" with intramuscular colloidal antimony, or intravenous tartar emetic injections, and also with carbon tetrachloride by mouth in human schistosomiasis and in distoma infestation of cattle.

TRANSMISSION OF KALA-AZAR.

Dr. C. M. WENYON began by pointing out that development of kala-azar and oriental sore parasites into *leptomonas* forms was strong evidence for an insect host. *Leptomonas* were essentially intestinal parasites of insects or other invertebrates. The flea had such an infection, which spread from flea to flea as small rounded bodies, resembling *leishmania* of kala-azar and oriental sore. They escaped in the flea's fæces, were ingested by flea larvæ, and appeared as *leptomonas* in the hind gut of adult flea. All insect *leptomonas* had that simple life-history. A sand fly which ingested parasites of kala-azar, or oriental sore, acquired *leptomonas* infection, but in stomach, œsophagus, and even buccal cavity, not in hind gut. If such sand fly fed through a membrane into a fluid it injected the *leptomonas*, it must therefore inject these also into wound it inflicted in skin. That no one had actually transmitted kala-azar, or oriental sore, by its bite was not due to lack of infectivity, for if the flagellates were removed by dissection from sand fly and injected into man's skin (oriental sore), or into hamster's peritoneum, a kala-azar infection occurred. Perhaps "receptive" condition was necessary to ensure infection from small dose injected through proboscis. *Leishmania* parasites would develop in the bed bug, but that could not be host for distribution of bug and disease differed, and if few *leishmania* were ingested by bug only few flagellates developed. In the natural host there was progressive increase of flagellates which attached themselves to cells of the intestine. No attachment occurred in bug. Association of canine with human kala-azar in Mediterranean region gave rise to theory of flea transmission, but careful experiments had failed to incriminate that insect. Kala-azar parasites in intestinal villi of man indicated possible escape in fæces, and they had been demonstrated in the urine. Contamination infection was unlikely for the parasites could not withstand drying and would not survive in water. Ankylostomes were possible ingestors of the parasites, but these helminths from cases of kala-azar had not revealed trace of infection. In the sand fly from small dose of *leishmania* there developed large numbers of flagellates attached to cells of stomach and persisting for life of fly; thus the parasite behaved as in a natural insect host. Probably site of infection, originally in hind gut, had changed; or perhaps sand fly was not original insect host. Man having become infected from original insect host, which might or might not now function, the sand fly might have become secondarily infected from man. A similar problem was presented by tsetse fly transmitted trypanosomes, where development in tsetse was also an anterior one. It was a posterior one in the primitive *Trypanosoma lewisi* in the flea. This spread from flea to rat by the latter's

ingesting flea fæces containing infective trypanosomes. If the sand fly were the vector there were several possible modes of infection of man. Flagellates might be occasionally ejected from the fly's rectum on to the skin, but dose deposited would be even smaller than that injected from probocis. Crushing of sand fly gave larger dose which might be inoculable by scratching or by conveyance on fingers to mouth or conjunctiva.

In India the distribution of kala-azar corresponded with that of the sand fly *Phlebotomus argentipes*. In China the disease was found only north of the Yangtse. There was no information regarding existence of sand flies south of it. In India *argentipes* was most suspected, though development occurred also in *papatasii*. In North China *P. major* var. *chinensis* and *P. sergenti* var. became infected, but former was the better host. With oriental sore, *P. papatasii* in Palestine and Biskra had been infected, and in Bagdad *P. sergenti*. In Palestine and Biskra *P. papatasii* had been found infected in natives. In India a single infected *P. argentipes* had been captured in a kala-azar house. With South American cutaneous leishmaniasis a single experiment suggested that *P. intermedias* might be the vector. There were infections of animals—e.g., gecko and chameleon—and plants, with *leptomonas*, but nothing was known as to the relations these might have to the human diseases. At present, therefore, transmission problem of kala-azar and oriental sore centred around sand flies. The extraordinary flagellate development of *leishmania* parasites in them was convincing evidence that they were the vectors.

Discussion.

Prof. HINDLE gave an account of recent work supporting the view that sand flies were mainly responsible for the transmission of *leishmania*. He pointed out: (1) The *specific nature of the development in the sand fly*. The sand fly stomach did not serve merely as a favourable culture tube, for, if so, different strains of *leishmania* should develop equally well in any one species of phlebotomus. Yet, though four different strains of *leishmania* all developed into flagellate stage in the Chinese sand fly *P. major* var. *chinensis*, only the local strain of *leishmania* showed attachment of flagellates to stomach wall, and subsequent incursion of pharynx and buccal cavity. This presence of flagellates in anterior gut occurred only in the species of sand fly and with the particular strain of *leishmania* that seemed to be transmitted by it. (2) The *virulence of the flagellates in the sand fly*, proved by inoculation of contents of infected flies into susceptible hosts. As corollary, since these flagellates were present in the infected fly's proboscis and must therefore be inoculated into skin when that fly fed, that fly's bites would sooner or later produce infection. (3) The *geographical evidence*. In both India and China there was close agreement between distribution of kala-azar and that of sand fly presumably responsible for transmission of the disease. He criticised the transmission experiments up to date, and showed that with kala-azar they were inadequate in number to prove or disprove infectivity of the sand fly. In China kala-azar occurred in infants who, by reason of age, could not have been exposed to sand fly bites. Low and Cooke's case of kala-azar in an infant born in England, whose mother had contracted kala-azar in India, demonstrated that the disease might be congenitally acquired. The infant cases in China were doubtless of that kind. Referring to possibility of a second insect host in the cases of *leishmania* and *trypanosoma* in which flagellate stage occurred only in anterior gut of insect vector, here the parasite had merely lost hind gut flagellate stage in becoming closer adapted for life in the vertebrate host. Suppression of development in insect host reached its limit in the disease "dourine," where the trypanosome had become a parasite of the vertebrate host only, and transmission was only by direct contact in coitus.

Colonel A. G. MCKENDRICK quoted results of his statistical inquiry in support of the theory of sand fly transmission of kala-azar.

Sir FRANK CONNOR described his cases in Bagdad and in India of familial and of multiple oriental sore. His clinical observations of these and other cases, their personal habits and circumstances, favoured the theory of the frequent occurrence of direct contact transmission of oriental sore.

Dr. CHRISTOPHERSON pointed out the profound biological difference between the morphologically indistinguishable parasites of trivial oriental sore and fatal kala-azar. Parasites of oriental sore experimentally inoculated into human beings always produced only oriental sore. Clinical evidence suggested that oriental sore was the result of skin infection with insect flagellate, and kala-azar resulted after the flagellate had been further pathogenically modified by additional developmental cycle in another host. His own experience of naso-oral and dermal leishmaniasis in Sudan showed that lesions could be the result of inoculation by insect, and also by direct contact infection.

Dr. MANSON-BAHR said he had observed oriental sore appearing in one parent in India, and six months after the family of four had returned to England the sore appearing in the other parent and the two children before the lesion in the first parent had healed. This suggested direct contact infection. He pointed out that to Dr. Wenyon we owed valuable and indispensable pioneer work on the transmission of oriental sore.

Correspondence.

"Audi alteram partem."

ACUTE DISSEMINATED ENCEPHALOMYELITIS.

To the Editor of THE LANCET.

SIR,—Attention should be directed to the frequency with which cases of acute disseminated encephalomyelitis are being encountered in certain parts of London. A number of cases more or less similar have been met with during the last few years in association with vaccination or with measles, but otherwise until recently, they have been rare. In June last however, Drs. Hunter and Brain[1] were able to report that they had seen six cases within a period of two months. In Germany and Austria such cases have been recorded in moderate numbers during the last two years, and there they seem to have occurred in circumscribed epidemics. Redlich[2] in March, 1927, reported that he had seen numerous cases in Austria. Pette[3] saw 25 at Hamburg in 1926, and the early part of 1927, Muntzka[4] in a paper just published record five cases at Dölling.

Now that these cases are occurring more commonly in London it is desirable that their clinical features should be made widely known in order that as many as possible of the cases may be recognised. The more severe of the cases which I have seen are characterised clinically by the facts that the symptoms are referable to widely separated, or, at any rate, discrete parts of the central nervous system, and, secondly, that they come on in a series of attacks, different parts of the cerebro-spinal axis becoming involved suddenly at different times.

The first case I saw was that of a man of 70 who was under the care of Dr. C. E. Sundell at the Seamen's Hospital in January of this year. His illness began with pains in both legs, and within a day or two the legs became weak and numb; subsequent examination showed that the paralysis was of the flaccid type. During the next week there was considerable recovery and then paralysis of the

[1] Hunter, D., and Brain, W. B.: THE LANCET, 1928, i., 1250.
[2] Redlich, E.: Wien. klin. Wochschr., 1927, xl., 344.
[3] Pette, H.: Münch. med. Wochshr., 1927, lxxiv., 1409.
[4] Muntzka, K.: Zeitschr. f. d. g. Neur. u. Psych., 1928, cxv. 161.

ands came on abruptly in the course of a few hours; the xtensor muscles in the forearms were as a whole more ffected than the flexor, and in the right arm partial paralysis xtended as high as the deltoid. Accompanying this aralysis was a sensory loss corresponding to the fifth and ixth cervical segments of the cord. These symptoms emained almost stationary for 14 days, and then acute ulbar symptoms came on and the patient died within a ew hours from respiratory failure. In this case there was vidence of invasion at different times of three portions of he nervous system—lumbar enlargement, cervical enlargement, and medulla.

In the next case—a man of 32, admitted under the care f Dr. S. Wyard at the Bolingbroke Hospital on the last ay of June—the patient had felt indefinitely ill for a few ays and had severe headache; then he gradually lost he power of his legs in the course of four or five days, and he paralysis was accompanied by a feeling of numbness oth in the legs and in the arms. During the next five or ix days he was semi-conscious all the time. A fortnight fter the beginning of the illness the left side of the face ecame paralysed, but it recovered rapidly after four days. n the limbs, at this stage, the tendon-jerks were all weak, he knee-jerks being unobtainable; the plantar reflexes ere indefinitely extensor. The abdominal reflexes were bsent. The patient complained for many days of severe ains in the arms. The cerebro-spinal fluid contained an xcess of protein (0·10 per cent.) but no excess of cells. n the course of five or six weeks this patient made a complete ecovery.

A third case was that of a man of 55, admitted under my are at the Bolingbroke Hospital on August 27th, 1928. [e had not felt well for some months, and four days before dmission on awakening in the morning he found that oth his arms were weak and shaky. Within the next our days the hands became almost useless, and then ecovered considerably. Two days after admission both ands had fair power, but they were still tremulous. By hat time both sides of the face had become completely aralysed. The tendon-jerks were all brisk, and the plantar eflexes indefinite. There was no sensory loss. The patient as slightly delirious, but could be recalled to consciousness. [e answered questions, but was very irritable. The cerebro-inal fluid showed an excess of protein (0·085 per cent.), ut no increase of cells. During the next 13 days his ondition was almost stationary, but towards the end of hat time his face showed great recovery. Then on Sept. 9th is temperature, which had hitherto been normal, rose to 00° F., and at the same time the patient began to have ifficulty in swallowing and in talking. During the next 3 hours the temperature rose steadily to 102·4° F., and the aralysis of larynx and pharynx and tongue became absolute. he patient died from respiratory failure on Sept. 14th.

A fourth case was that of a little girl of 8 whom I w at the National Hospital, Queen-square, on August 23rd. fter a period of indefinite malaise she had suffered from ains in the lower limbs; then her legs became weak and ie had difficulty in micturition, amounting almost to tention of urine. At that time she was considered to be iffering from poliomyelitis, but she had a high temperature. fter three weeks the power of the legs had in great measure turned, but then the patient began to have difficulty in lking. (The precise nature of this difficulty cannot be termined.) She became very drowsy, and lay constantly ith her head and eyes turned to the right. About the time this aggravation her sight became dim. When admitted the hospital she had extensor plantar responses on both des, absent tendon-jerks in the right leg and arm, intention emor in both hands, conjugate deviation of the eyes to e right, without any single ocular palsy, and partial rophy of both optic discs. She is now recovering well, t it is too early to say how far recovery will go.

It is to be expected that in less severe cases of the me disease, the malady would not get beyond the age of one more or less localised lesion, and most the German cases have been of this type. Many of em presented the picture of a transverse myelitis sudden onset and rapid recovery. Others at certain ages closely resembled poliomyelitis. In the last w weeks I have seen one case, similar to the fore-ing as regards onset, but in which only spinal mptoms have appeared, and another case in which e diagnosis remains in doubt between this disease id poliomyelitis.

The prognosis generally seems to be more favourable an the record of these few cases implies. In edlich's cases complete recovery was the rule and talities were few. In Pette's series of 25 cases ost of the patients made good recoveries and there were only two deaths. Hunter and Brain reported four complete recoveries and one death among their six cases. Recovery may be incomplete and permanent defect remain, but no "after-effects" in the sense of disabilities developing after apparent recovery have, to my knowledge, been described.

I am, Sir, yours faithfully,

J. PURDON MARTIN.

Harley-street, W., Sept. 17th, 1928.

THE LATER RESULTS OF PARTIAL GASTRECTOMY FOR GASTRIC AND DUODENAL ULCER.

To the Editor of THE LANCET.

SIR,—Dr. Arthur Hurst's letter in THE LANCET of Sept. 1st cannot be allowed to pass without comment. He says: "Our experience shows that gastro-enterostomy is the commonest gastric disorder to-day, and undoing gastro-enterostomies is the operation we now most frequently recommend." This emphatic opinion from so eminent an authority might cause considerable confusion in the mind of the profession, if he had not spoilt the first part of this terse paragraph by figures cited immediately before it—viz., since 1921 there had been at the New Lodge Clinic 37 patients suffering from gastric ulcer, 165 from duodenal ulcer, and 67 from the ill-results of gastro-enterostomy or partial gastrectomy. So on his own showing gastro-enterostomy is not the commonest gastric disorder of to-day. Moreover, he does not indicate a very obvious point, which is that his clinic naturally collects failures.

Against Dr. Hurst's statement that the undoing of gastro-enterostomy is the operation he now most frequently recommends I put this one—of the hundreds of gastro-enterostomies I have done myself for duodenal ulcer and of the thousands I know which have been done by my colleagues, I cannot recall a single case in which the gastro-enterostomy has been subsequently undone, except where a jejunal ulcer has developed, and then, of course, it is the jejunal ulcer which is the disorder and not the gastro-enterostomy. But I suppose all of us have undone gastro-enterostomies performed where there was no sign of ulcer, past or present, and possibly Dr. Hurst has this class of case in mind when he makes the sweeping statement quoted above. In Leeds we have put this kind of surgery behind us long ago.

I am, Sir, yours faithfully,

Park-square, Leeds, Sept. 17th, 1928. E. R. FLINT.

To the Editor of THE LANCET.

SIR,—I find it a little difficult to reply, at one and the same time, to Dr. Hurst and Mr. Flint, for while the one ironically suggests that all operative procedures on the stomach are doomed to ultimate failure and that the commonest gastric operation of to-day is the undoing of gastro-enterostomies, the other tells us that the unsatisfactory results of gastro-enterostomy, far from reaching the 36 per cent. suggested in my article, are not more than 10 per cent., and that in many of these the symptoms are so slight that the cases could be considered satisfactory. Were I not very deeply impressed by the fact that in the present state of our knowledge of gastric and duodenal ulceration it is impossible to be categorical (even that surgical treatment is useless) I should find it impossible to reconcile these two opinions. Without reopening the whole question, however, there are certain explanatory points to which I should like to refer.

Both Dr. Hurst and Mr. Flint appear to be unfavourably impressed by the fact that I use the ability to take all kinds of food without restriction as one of my criteria of cure. But could any test be more appropriate, especially from the patient's point of view? If he has to continue upon a special restricted

diet for the rest of his life he can scarcely regard himself as cured in the truest sense of that word, whether such a dietary be the sole treatment or merely the complementary treatment of a gastro-enterostomy. Unfortunately the cases of gastro-enterostomy included in my unsatisfactory group have had perforce to continue with such treatment for much longer periods than the three to six months which I claim should be sufficient if an operation is really curative. That a comparatively large ulcer will heal in such time if placed under the best conditions has been amply proved both by subsequent operations and radiographically. If operative or other treatment has brought about complete cure there should be no need for further dietetic restriction beyond this period, and it is in this respect particularly that the results of partial gastrectomy have turned out much more satisfactory than those of gastro-enterostomy, as indeed Mr. Flint's experience of the necessity for medical treatment "long afterwards" in the latter operation suggests.

It has been my ill-fortune, too, to meet several cases where following gastro-enterostomy for duodenal ulcer the patient remained completely free of digestive symptoms, but hæmorrhage or perforation many years later showed that the ulcer was still active, or, what is more probable, that fresh ulceration had occurred owing to the fact that the operation had not dealt satisfactorily with the cause, even although it had relieved the symptoms. This, indeed, is the crux of the argument—the relief of symptoms as opposed to the removal of the cause—and as far as the evidence of my cases goes it would appear that we are approaching the latter more closely by the performance of a partial gastrectomy than either by medical treatment or gastro-enterostomy. My attitude is, however, not a dogmatic one (the curtailment of the article to render it of suitable length for publication may perhaps have conveyed a wrong impression) and I realise to the full that the last word has not been said; yet the results in the cases of this series cannot be gainsaid, and in the absence of further knowledge they justify the recommendation of an operation which, in view of its mortality, any surgeon might otherwise hesitate to perform.

It would be interesting to learn what Dr. Hurst has to suggest, as an alternative, for those cases in acute agony who have already had a succession of medical treatments with almost immediate recurrence, and what prospects he has to offer them of returning to their former livelihood, often of an arduous nature, with little opportunity, either financial or otherwise, for carrying out any strict dietetic régime. The majority of the gastrectomy cases quoted in my article are men and women of the labouring classes who have returned to their former occupations without dietetic restrictions. But perhaps patients of this type do not find their way to the New Lodge Clinic.

I am, Sir, yours faithfully,

NORMAN C. LAKE.

Welbeck-street, W., Sept. 17th, 1928.

BLEPHARITIS SUCCESSFULLY TREATED BY AN AUTOGENOUS ANTIVIRUS.

To the Editor of THE LANCET.

SIR,—It will be interesting to hear if Dr. Armstrong's case of blepharitis treated by bacteriological methods maintains freedom from relapse. During the last year every case of severe blepharitis seen by me in private practice, and in the out-patient departments of two London hospitals, has been found to be associated with gross focal sepsis. When the origin of the focal sepsis has been dealt with, usually either by the dental surgeon or the throat surgeon, combined with mild local treatment, the blepharitis has been permanently cured.

I am, Sir, yours faithfully,

A. F. MACCALLAN.

Welbeck-street, W., Sept. 15th, 1928.

INSOLATION IN PULMONARY TUBERCLE.

To the Editor of THE LANCET.

SIR,—I am glad to see attention called to the danger of rest in hot sunshine for those who are suffering from pulmonary tuberculosis. Verandas on the south side are commonly provided in sanatoria; but medical officers of experience know that it is unwise to use them in hot weather. All such structures should have ample gaps in the roof for ventilation or a discontinuous double roof. At Pinewood Sanatorium, Wokingham, a northerly veranda is provided as an alternative; in other institutions, rest shelters in shady situations. Even an open tiled terrace with awning next the building may be undesirably hot in summer. On the other hand, in dull or cold weather in this country we need all the sunlight available, so that permanent verandas in front of bedrooms have their drawbacks. At the Crooksbury Sanatorium awnings which can be furled are provided instead, and covered places not in front of the bedrooms; but in hot weather, for non-febrile patients, rest under the pine trees has often been preferred. To clear away all the trees from the vicinity of a sanatorium is a great mistake. Asphalted paths may be undesirably hot in summer for phthisical patients; dry walks, carpeted with pine-needles, are preferable. Sunshine treatment in "surgical" tuberculosis needs caution; in the pulmonary varieties it is dangerous to the febrile, and in some other cases.

I am, Sir, yours faithfully,

Farnham, Surrey, Sept. 14th, 1928. F. R. WALTERS.

BRITISH SOCIAL HYGIENE COUNCIL.

To the Editor of THE LANCET.

SIR,—Owing to the growing work of the British Social Hygiene Council it has been found necessary to obtain the services of a whole-time salaried medical secretary who is able to undertake medical educational work in connexion with the general organisation of the Council in all parts of the country. The medical secretary would also give assistance in the general work of the Council. As this entails a considerable amount of public speaking preference will be given to those accustomed to handling both medical and lay audiences. The post would give scope for anyone interested in research on venereal subjects and would probably be suitable for a younger man retired from one of the services. The work of the medical department is under the direction of the honorary medical secretaries and the medical advisory board. Further particulars are given in your advertisement columns.—We are, Sirs, yours faithfully,

KENNETH M. WALKER.
A. H. HARKNESS.
Hon. Medical Secretaries.

Carteret House, Carteret-street, London, S.W.
Sept. 15th, 1928.

B.M., B.Ch. Oxon. has omitted to enclose his card

SUCCESS OF BIRMINGHAM CONTRIBUTORY SCHEME.—This scheme, which was started only eight months ago already has 306,000 members and £61,000 has been paid to the hospital. This result is mainly due to the development of the Hospital Saturday Fund, which last year distributed £44,000. One of the conditions upon which the scheme was established was the abolition of notes and tickets.

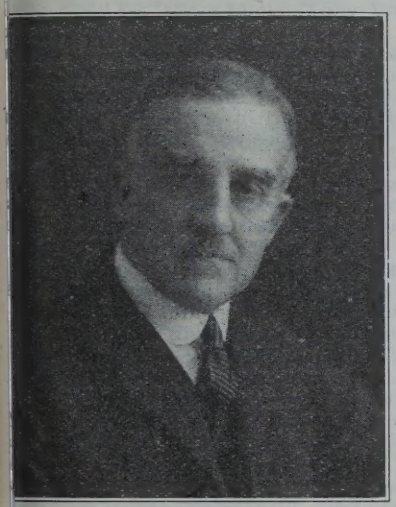
TUBERCULOSIS DISPENSARY IN MANCHESTER.—The Ministry of Health has given notice that a public inquiry into the proposal of the Manchester Corporation to build a dispensary for the treatment of tuberculosis upon the vacant plot of land at the corner of Oxford-road and Denmark-road, opposite the Royal Infirmary, will be held in Manchester Town Hall on Oct. 11th. During the debate in the city council the recommendations of the public health committee were approved, being opposed by only one member.

Obituary.

JOSEPH JOHN PERKINS, M.B. CAMB., F.R.C.P. LOND.

THE death on Sept. 13th of Dr. J. J. Perkins, at he age of 65 years, has come as a grievous blow to his arge circle of friends. Affectionately known as 'J. J." to most of his contemporaries, he was held n high esteem by his colleagues and former clerks, nd was beloved by his patients, the secret of his enius for friendship being unselfish sympathy and enerosity.

Born in 1863, Perkins started his career with a ide knowledge of the classics and of history acquired t Manchester University; it was not until he went p to Cambridge as an exhibitioner to Emmanuel College that his thoughts turned towards medicine. He became a scholar of his College and took a first-class in 1888 in the Natural Science Tripos before entering St. Thomas's Hospital at a slightly older age than the average medical student. Gifted with a retentive memory and with a keen incisive mind, he came early under the influence of the late Dr. J. S. Bristowe, who profoundly impressed him and for whom he entertained always the eepest admiration and esteem.



DR. PERKINS.

On qualifying in 1891 Perkins held house appointents at St. Thomas's and Brompton, taking every pportunity of increasing his experience, and in his ng association with these two hospitals developing clinical acumen and a deep knowledge of treatment hich made his opinion much sought after, with the sult that he acquired a very considerable consulting actice, not only in regard to diseases of the chest, s more immediate specialty, but also in regard to fficult cases in general. He would listen keenly to e history; then, after a quick but thorough examinaon, he not infrequently made a diagnosis in difficult ses surprising in its accuracy and brilliance. Although enly impressed with the value of the older methods physical examination he was quick to adopt new ethods and applied them with a due sense of rspective. His ability, sympathy, and the practical lpfulness of his suggestions combined to secure for m the special professional distinction of being a ctor's doctor. He was for many years secretary of e National Council for the Prevention of Tuberlosis, devoting his time unstintingly to this work, that his place will be hard to fill.

After an attack of rheumatic fever in early youth was never robust, and in the later years of his life s health was far from good. In spite of this he rked extremely hard until a serious illness some n years ago when he was away from work for many nths. On returning, though he continued to actise, he restricted his private work, and about ur years ago he decided to give up all professional tivities. From this time onwards he devoted himf to his numerous interests, and was apparently ppy in his keen enjoyment of them. He read deeply in the classics, took long motor drives to distant churches, where he indulged his love of architecture and increased his profound knowledge of monumental brasses and of old stained glass.

In congenial circumstances Perkins was a brilliant conversationalist and a witty companion with a keen sense of humour. His hearty appreciation of an apt reply or an amusing anecdote will long remain as a pleasant memory to his friends. But in spite of his large sympathies and of his wide circle of friends, there was even to those who knew him best a strange reticence, due to a sensitive nature and a modesty amounting almost to diffidence. It was this that prevented him from writing much in the medical journals and from producing books—a real loss to medicine, since he had garnered much medical wisdom which he was only able to impart to those coming immediately under his personal influence.

Of Perkins's genius for friendship we have received remarkable testimony of which only fragments can be quoted. The colleague who supplied the biographical notes writes: "I owe much to his stimulus, criticism, and wisdom, and find it hard to realise that the friend and counsellor of the whole of my medical life has departed. Perkins will be missed also, not least, by the young sons of his friends, to whom he was ever ready with sympathy, stimulus, and help." Another colleague says: "The beginning of my friendship with Perkins dates back to the time when I was a clinical clerk, and though as house physician he would of course possess what to the student seemed a profound knowledge of medicine, yet the main impression he left on me was not only that of a remarkably good house physician. Much more did he impress me even then with his kindly thoughtfulness and shrewd humour and above all with what I now realise was the early maturity of his outlook. The soul of loyalty to his hospital and a staunch colleague, his attachments were deep and enduring and he was never happier than when spending a week-end with some sanatorium friend. He was a good conversationalist, but in his long talks by the fireside, interesting, amusing, and stimulating as they were, he studiously avoided any reference to himself. Sociable he was and a delightful companion, but he viewed the world in a detached and impersonal fashion and held himself rather aloof from the rough and tumble of life. Good health he lacked, but as far as he could he hid this from the world and in his outward bearing he showed little evidence of the recurring outbreaks of tuberculosis which dogged his footsteps throughout life. The picture which I think Perkins will leave in the minds of most of us is that of a man of distinguished bearing, thin, fastidious in his dress, cheerful and often gay, mildly sardonic at times, but eminently courteous and considerate and always with a rather proud reserve concerning himself."

J. G. E. writes: "It was 32 years ago that I first met Perkins when I was house physician at the City of London Hospital, and to-day I mourn one of the best friends a man ever had. He was a man of many friends and he made us all realise the fullest meaning of that word, for with absolute obliteration of self he entered wholeheartedly into our lives and made our interests his own. He was always ready to encourage and help when we were in doubt, and many of us have reason to be profoundly thankful for his sound judgment and wise counsel."

ALBERT WILSON, M.D. EDIN.

Dr. Wilson, who died at Fairwarp, near Uckfield, on Sept. 9th, was in his seventy-fifth year. He was born at Newcastle-on-Tyne, educated at the Friends' School, York, where he developed a marked taste for natural science, and went on to Edinburgh University, taking the gold medal in his M.D. for a thesis on heart diseases and, later on, visiting the Universities of Paris, Vienna, Berlin, and St. Petersburg. After qualifying in 1878 he was house surgeon at the Royal Infirmary, Edinburgh, and resident physician to the Cowgate Dispensary, playing a

prominent part at the Royal Medical Society, of which he was president in 1879. Moving to London he had at first a City practice, but his interests tended more and more in the direction of the study of psychology, especially criminal psychology, and he became medical officer to the Walthamstow Branch of the Essex Asylum, doing much unostentatious work among poor folk in the East End. His varied publications included books on Education, Personality and Crime (1908), Unfinished Man (1910), and papers on multiple personality. At the time of his death he had just corrected the final proofs of a book entitled The Child of Circumstance, being a sociological study of the criminal couched in simple non-technical language and embodying the author's faith in the possibility of physical and mental improvement for the most degraded class of humanity. Dr. Wilson served with the French Red Cross in the early part of the war, and made a contribution on war wounds. All his life a keen traveller, his holidays were generally spent in some foreign clinic, where he added to his store of curious knowledge. Latterly he confined himself to consulting work. Dr. Wilson married, in 1881, Amy, daughter of Surg.-Capt. J. C. Minto, M.D., who survives him with two daughters.

Colonel Sir JOHN HEWAT, who died at Port Elizabeth on August 20th, took a prominent part in South African affairs in the intervals of a busy professional life spent in practice at Woodstock, a suburb of Cape Town. Born in Sarawak in 1863, he was a son of the late Captain John Hewat, of Cape Town, and was educated at George Watson's College, Edinburgh, and at the South African College, Cape Town. After graduating in medicine at Edinburgh University in 1887, he settled at Woodstock and became one of the leading practitioners there. He entered the old Cape House of Assembly as Progressive Member for Woodstock in 1904, and was re-elected in 1915 to sit in the Union Assembly. Under the leadership of the late Sir Starr Jameson he was for some years Chief Whip of the Unionist Party. Joining the Cape Garrison Artillery as a young man, he enjoyed long service as an officer of the corps, from which he retired with the rank of captain. At the Coronation of the present King he was one of the delegates chosen to represent South Africa and he was also one of a delegation from the Union which visited the war zone in 1915. He served in the brief German South-West campaign in 1915 as lieutenant-colonel in the South African Medical Corps, being mentioned in despatches, and was promoted to the rank of full colonel in 1917. He was knighted in 1919. A keen sportsman, Sir John was a steward of the South African Turf Club, and also president of the Cape Colony Athletic and Cycling Union.

Dr. F. J. NICHOLLS, who died at Eastbourne on Sept. 1st after a month's illness at the age of 58, was well known throughout the locality not only as a practitioner but as a sportsman. The son of Mr. E. W. Nicholls, of Eastbourne, he was sent to Rugby School, where he played in the XI. in 1888 and 1889. Thence he went up to St. John's College, Cambridge, and he studied medicine both there and at Guy's Hospital, qualifying as M.R.C.S. in 1899, and as M.B. in the following year. After special experience at the City of London Hospital for Diseases of the Chest, Victoria Park, and elsewhere, he settled in practice at Eltham, moving to Eastbourne some 19 years ago. During the war he did valuable work as anæsthetist to the war hospitals in the vicinity, and held a commission with the Sussex Volunteers. Outside his professional work he was an enthusiastic tennis player and golfer, and in former years played for the Eastbourne Cricket Club. His widow, the daughter of Mr. H. Simpson Gee, survives him with three sons and a daughter.

The death of Dr. OWEN PRITCHARD, at the age of 75, removes a distinguished member of the Welsh community in London. Educated at St. Bartholomew's Hospital he graduated as L.S.A. in 1880 and as M.D in the University of Brussels three years later Entering practice in London he became physician and later surgeon to St. Saviour's Hospital for Cancer and Diseases of Women, and made a number o contributions to professional journals. He was also associated with several other charitable institutions In 1906 he was appointed High Sheriff for the county of Anglesey, and for the later years of his life wa closely connected with the University of Bangor which last year conferred upon him the degree o LL.D. in recognition of his services. Dr. Pritchard who was unmarried, was a collector of books and china, and it is stated that some of his valuabl furniture has been left to the National Museum o Wales. The funeral took place on Sept. 3rd.

Dr. WILLIAM MACFIE CAMPBELL, who died o Sept. 13th in his eightieth year, was a graduate of th University of Edinburgh, where he took the M.D degree in 1869 and won the gold medal for his doctor' thesis in 1873. After post-graduate experience a Paris and Vienna, he went to Liverpool as hous surgeon to the Northern Hospital, and it was not lon before he was appointed to its consulting staff, a well as to that of other institutions in the neighbour hood, including the Liverpool South Dispensary Interested especially in gynæcology, he published considerable number of papers, chiefly in the *Liverpoo Medico-Chirurgical Journal*, and won a high reputa tion among his colleagues, who elected him to variou offices in the Liverpool Medical Institution, the mos important centre of medical activity and interest i the city. Dr. John Hay, as president of this society writes of him as follows: "I should like to put o record an appreciation of the valuable work done b him for the profession in Liverpool, and, more pa ticularly, for the Medical Institution. In 1871 h became a member; from 1875 until 1901 he wa continuously in office; and during 1898 and 1899 h was president of the Institution. But whether i office or out of office, he gave freely of his time an brains. He served the Medical Institution and th profession ungrudgingly, unselfishly, and wisely; an the vigorous health of our Society at the prese time is in no small measure due to his su tained efforts. He has left us a noble tradition Dr. Campbell had at one time probably th largest practice in the South End of Liverpoo and won the affectionate regard of his many patient In his earlier days he was attached as surgeon to t 2nd Volunteer Battalion of the King's Liverpo Regiment, and in later life gave public service as justice of the peace. His death will be regretted b a large circle in Liverpool.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—T following demonstrations of specimens in the Museum w be given at 5 P.M. in the theatre of the College in Lincol Inn-fields. The demonstrations are open to advanc students and medical practitioners. On Oct. 19th Sir Arth Keith will discuss problems in human anatomy which ar out of the identification of a skull attributed to Ld Darnley, showing illustrative specimens. On Oct. 2 he will trace the development, and on Nov. 2nd the evo tion, of the human foot in relation to orthopædic disorde On Oct. 22nd and 26th and Nov. 5th Mr. T. W. P. Lawre will comment on surgical specimens.

POST-GRADUATE COURSES IN FRANCE.—A series f courses on the diagnosis and treatment of cancer will be h at Strasbourg from Oct. 16th–31st, under the direction f Prof. Gunsett, to whom application may be made at e Centre Anticancéreux, Hôpital Civil, Strasbourg, Alsa Dr. C. Laubry has arranged a course on diseases of e heart and circulation and of the blood, to be given at e Hôpital Broussais, 96 rue Didot, Paris XVI., from Oct. h to 20th. Particulars may be had from Dr. Moussoir at e hospital.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.—The winter session of this school will open on Monday, Oct. 1st, when an introductory address will be given in the Library, at 4.30 P.M., by Sir Thomas Barlow, F.R.S.

WESTMINSTER HOSPITAL MEDICAL SCHOOL.—The annual dinner of past and present students will take place in the Royal Adelaide Galleries, Gatti's Restaurant, Strand, on Monday, Oct. 1st, at 7 P.M. for 7.30, Sir James Purves-Stewart in the chair.

CHELSEA CLINICAL SOCIETY.—The annual dinner will take place at the Hotel Rembrandt, Thurloe-place, London, S.W., on Oct. 23rd, at 7.30 P.M. Those intending to be present are requested to communicate with Mr. L. A. Harwood, 90, Sloane-street, London, S.W. 1, as early as possible.

CANCER CAMPAIGN IN THE NORTH.—The campaign against cancer in Lancashire, Cheshire, and North Wales will now be resumed energetically, and the Council hopes that before the end of the year the sum of £200,000 will have been collected in this area, another £90,000 being required to this end.

ST. BARTHOLOMEW'S HOSPITAL, ROCHESTER.—The inadequate pathological department of this institution has been removed to an adapted water-tower, formerly part of a brewery, at the back of the buildings. St. Bartholomew's was the first general hospital in Kent to possess such a department. The staff deal with some 6000 cases per annum.

EXTENSION OF RUGBY HOSPITAL.—A new out-patient department and casualty wards are being erected at Rugby Hospital. Mrs. Arthur James, who recently laid the foundation-stone, has contributed £8000 towards the cost, as a memorial of her late husband. The penny-in-the-pound scheme in aid of this hospital, which was started only two years ago, has 11,400 contributors.

BLACKPOOL VICTORIA HOSPITAL.—The board of management have decided to build an entirely new hospital of 150 beds on a fresh site at a cost of about £100,000. The existing buildings are officially described as "absolutely out of date." The children's ward is a temporary wooden building, there are no separate medical and surgical wards, the nurses live away from the hospital, an annex of 20 beds is separate from the other buildings, the administrative block is "totally inadequate," and the out-patient department is "unsatisfactory."

GERMAN CONGRESS OF UROLOGY.—The eighth annual session of the Deutsche Gesellschaft für Urologie takes place at the Langenbeck-Virchow-Haus in Berlin from Wednesday, Sept. 26th, to Saturday, the 29th, under the presidency of Prof. Alex. v. Lichtenberg (Berlin). At the opening sitting on Wednesday Prof. C. Posner (Berlin) will deliver an oration on Max Nitze in memory of the jubilee of the invention of the cystoscope. On the same day Dr. Viktor Blum (Vienna) will open a discussion on hypertrophy of the prostate and diverticula of the bladder, and Dr. Rudolf Paschkis (Vienna) on chronic non-specific ulcers of the bladder. On Thursday will come up for discussion the pathology and treatment of malformations of the kidney and ureter, on Friday strictures of the urinary passages, and on Saturday the relations of urology to social legislation. There will be an exhibition of instruments, apparatus, and books during the Congress. Further information from Dr. Arthur Lewin, Berlin, W.50, Tauentzienstrasse 13.

POST-GRADUATE STUDIES IN MANCHESTER.—Post-graduate work for the coming year in Manchester will follow the lines of previous years. Besides the teaching which leads to diplomas in special subjects, such as public health and psychological medicine, the University is undertaking set courses in special subjects. A whole-time intensive course in general medicine and surgery is at present in progress and will be followed by a short similar course in obstetrics and gynæcology, beginning on Sept. 29th. Part-time courses in ophthalmology will start in October, and in radiological work, diseases of the skin, and clinical pathology in the new year. Clinical assistantships are obtainable at several of the general and special hospitals. The hospitals also give courses in different parts of the year. The first part of the Royal Infirmary course lasts from Sept. 25th to Dec. 11th, and consists of individual lectures on independent subjects. The lectures are on Tuesday and Friday afternoons. On Oct. 23rd Sir Berkeley Moynihan will give the Lloyd Roberts lecture, his subject being Some Problems in Gastric Surgery. At Ancoats Hospital short courses will be given on Thursday afternoons on the sympathetic nervous system, minor operations on the ear, nose and throat, and on advances in antiseptics.

Dr. Kinnier Wilson has been made an honorary corresponding member of the Gesellschaft Deutscher Nervenärzte.

NEW HOSPITAL AT BAKEWELL.—On Sept. 11th the Duke of Devonshire opened a new infectious diseases hospital at Bakewell, Derbyshire, which will meet the needs of six urban districts and one rural district. The hospital cost £9500 and includes three blocks of buildings.

DUDLEY GUEST HOSPITAL.—This hospital is about to be enlarged from 104 to 185 beds. The existing buildings are, to a certain extent, to be modernised, and the additions will include two ward units of two storeys each and eight single-bed observation wards.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Sept. 24th to SATURDAY, Sept. 29th.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Course in Electro-Therapy by Dr. C. B. Heald. Four lecture-demonstrations on successive Wednesdays at 5.15 P.M. WESTMINSTER HOSPITAL, S.W.—Special post-graduate Course in Medicine, Surgery and the Specialties. All day course.—ROYAL EYE HOSPITAL, St. George's-circus, S.E.—Every afternoon. Course in Ophthalmology.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Sept. 25th.—3.15 P.M., Dr. E. H. Shaw: Demonstration of Immediate Microscopic Examination of Tumours.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
MONDAY, Sept. 24th.—1.30 P.M.: Hearing Tests.
WEDNESDAY.—1.30 P.M.: Examination of the Sinuses.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, Sept. 25th.—4.15 P.M.: Mr. W. R. Douglas: Demonstration of Surgical Cases.
FRIDAY.—4.15 P.M.: Dr. P. B. Mumford: Some Problems in the Diagnosis and Treatment of Syphilis.

Appointments.

BARKER, H. L., L.R.C.P. Lond., M.R.C.S., D.P.H., has been appointed Medical Officer of Health, Ilkeston.

CHALLANS, F., M.D. Lond., Regional Medical Officer for the Ministry of Health in Devon, Cornwall, and Somerset.

JONES, E. H., M.D., C.M. Edin., Medical Officer of the Rhyl Medical Relief District of the St. Asaph Union.

KENNEDY, A. D., M.D. Glasg., to be a Medical Referee under the Workmen's Compensation Act for Wick in the Sheriffdom of Caithness, Orkney, and Shetland.

STRACHAN, C. H., M.B., Ch.B. Aberd., Resident House Surgeon, Batley Hospital.

Certifying Surgeons under the Factory and Workshop Acts: FARRER, R. T., M.R.C.S. Eng., L.S.A. (Brighthouse, W. Riding); MAIR, W. B. G., M.B., Ch.B. Glasg. (Carnwath); ROCHE, G. D., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg. (Scalloway, Shetland); and WATERHOUSE, A. R. (Wirksworth).

Vacancies.

For further information refer to the advertisement columns.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—H.S. Also Asst. H.P. Each at rate of £100.

Birmingham General Hospital.—Asst. S. £50.

Bridgetown, Barbados General Hospital, B.W.I.—Sen. Res. S. £300.

Brighton, Royal Alexandra Hospital for Sick Children.—H.P. £100.

British Medical Association, Tavistock-square, W.C.—Librarian. £400.

British Social Hygiene Council, Carteret House, Carteret-street, S.W.—Medical Secretary. £400.

Burnley, Victoria Hospital.—H.P. At rate of £125.

Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.

Carlisle, Cumberland Infirmary.—H.S. to Special Depts. At rate of £155.

Evelina Hospital for Children, Southwark, S.E.—H.P. At rate of £120. Also Hon. Asst. Aural Surg.

Exeter, Royal Devon and Exeter Hospital.—H.P. At rate of £130.

Gloucestershire County Council.—M.O. for Maternity and Child Welfare. £750.

Gloucester, Gloucestershire Royal Infirmary, &c.—H.P. At rate of £150.

Greenwich Metropolitan Borough.—M.O. for Maternity and Child Welfare Work. £600.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. Also H.P. Each at rate of £100. Also Part-Time Jun. Cas. O. At rate of £150.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, W.—Res. H.S. At rate of £75.
Huddersfield Royal Infirmary.—Pathologist. £750.
Infants Hospital, Vincent-square, Westminster.—Med. Reg. £120.
Jersey General Hospital and Poor-law Infirmary.—Res. M.O. £200.
Leeds, St. James' Hospital.—H.P. and S. £200.
Liverpool, Eye and Ear Infirmary, Myrtle-street.—H.S. £100. Also Hon. Asst. Surgeon to Ear, Nose and Throat Department.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. to Med. Supt. £250.
London Hospital, E.—First Asst. and Registrar to one of the five Surgical Firms. £300.
London Temperance Hospital, Hampstead-road, N.W.—Res. M.O. At rate of £175. Cas. O. At rate of £120. Also H.P. At rate of £100.
Macclesfield General Infirmary.—Res. H.S. £180.
Macclesfield, Parkside Mental Hospital.—Res. Clin. Asst. £75.
Maidstone, Kent County Mental Hospital.—Asst. M.O. £300.
Manchester, Monsall Hospital.—1st Asst. M.O. £600.
Mauritius, Port Louis.—M.O.H. £900.
Metropolitan Ear, Nose and Throat Hospital, 2, Fitzroy-square, W. Anæsthetist.
Middlesex Hospital, W., Feren's Institute of Oto-Laryngology.—Bernhard Baron Research Scholarship. £300.
National Hospital, Queen-square, W.C.—Asst. P.
Norwich, Norfolk and Norwich Hospital.—H.S. and Cas. O. Each £120.
Nuneaton Borough.—Asst. M.O.H. £600.
Prince of Wales's General Hospital, Tottenham, N.—H.S., Special H.S., and H.P. Each at rate of £120. Also Jun. H.S. and Jun. H.P. Each at rate of £90.
Public Dispensary, 122, Drury-lane, W.C.—Res. M.O. £120.
Queen's Hospital for Children, Hackney-road, E.—Physician-in-Charge Skin Department.
Royal College of Physicians, Pall Mall East.—Milroy Lecturer.
Royal Eye Hospital, St. George's Circus, S.E.—Clinical Assistants.
Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. £150.
St. Mark's Hospital for Cancer, &c., City-road, E.C.—H.S. At rate of £75.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—Hon. S. to Out-patients.
Southampton, Borough Isolation Hospital.—Res. M.O. £360.
Southern Rhodesia Medical Service.—Govt. M.O. £500 to £600.
Swansea Hospital.—Two H.S.'s. £150.
Warrington, County Mental Hospital, Winwick.—Asst. M.O. £350.
Willesden General Hospital, Harlesden, N.W.—Res. H.S. At rate of £100.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Pangbourne (Berks.).

Births, Marriages, and Deaths.

BIRTHS.

BROOKE.—On Sept. 13th, the wife of Ralph Brooke, M.B., F.R.C.S., of a daughter.
CAMERON.—On Sept. 12th, in a nursing home, Belfast, the wife of Captain W. Moore Cameron, O.B.E., R.A.M.C., of a son.
CORNER.—On Sept. 8th, in a nursing home, Bournemouth, the wife of Dr. H. W. Corner, of a daughter.
GAUSSEN.—On Sept. 7th, in a nursing home, Herne Bay, the wife of Surgeon Lieut.-Commander J. F. H. Gaussen, M.B., R.N., of a daughter.
HARDIE.—On Sept. 11th, at King-street, Great Yarmouth, the wife of Ronald W. W. Hardie, M.B., Ch.B., of a daughter.
LISTON.—On Sept. 15th, at Milner-street, Cadogan-square, S.W., the wife of Dr. R. Prosper Liston, of a son.
PORTER.—On Sept. 13th, at Kidderminster, the wife of Dr. C. Petvin Porter, of a daughter.

MARRIAGES.

LAWRENCE—BATSON.—On Sept. 7th, at Holy Trinity Church, Brompton, Robert Daniel Lawrence, M.D., to Doreen Nancy (Anne), only daughter of Mr. and Mrs. T. Batson, Overstrand-mansions, Battersea, S.W.
MURPHY—MURPHY.—On Sept. 1st, at Brompton Oratory, Major Denys Murphy, *M.C.*, F.R.C.S., I.M.S., to Vera, elder daughter of Mrs. Murphy, Greenleaze, Knowle, Bristol.

DEATHS.

CAMPBELL.—On Sept. 13th, at his residence, Shrewsbury-road, Birkenhead, William Macfie Campbell, M.D., J.P., late of Liverpool, in his 80th year.
EDGELOW.—On Sept. 14th, at Braddon Villa, Torquay, William Ford Edgelow, M.D., aged 75.
FORBES.—On Sept. 17th, at Cuminestown Turriff, Aberdeenshire, Hugh McGregor Forbes, L.R.C.S., L.R.C.P. Edin.
PERKINS.—On Sept. 13th, Joseph John Perkins, M.A., M.B. Camb., F.R.C.P. Lond., aged 65.
PHILLIPPS.—On Sept. 12th, suddenly at Seafield, Paignton, William Alfred Phillipps, M.D.
WYNDHAM.—On Sept. 7th, in London, Thomas Lancelot Wyndham, L.R.C.S. & P. Edin., aged 54.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts

THE INFLUENCE OF INDUSTRIAL POISONS UPON THE DIFFERENT ORGANS.*

BY SIR THOMAS OLIVER, M.D., F.R.C.P.

WHEN a poison has been absorbed and has circulated in the blood, it might be expected that the whole body would more or less suffer simultaneously, but experience shows that certain organs and tissues exercise a selective influence upon some poisons and not upon others. A distinction must be made between acute and chronic forms of industrial poisoning. There is the opinion that those tissues of the body which are the last to be developed and therefore the more delicately organised, are less resistant, hence the rapidity of the effects of alcohol upon the higher nerve centres in the brain. While the nervous system is not free from the harmful influences of lead, many research workers regard the blood and the hæmopoietic system as the anatomical elements earliest affected by lead—those bodily units, in fact, which are formed and function in the early stages of embryonic development, and which therefore ought to be the most stable. It is an interesting circumstance that while the blood and blood-making organs are readily influenced by lead, yet in the blood very little of the metal is found, even while the internal organs may contain it in considerable quantity. Although the blood may show physical and chemical changes due to the influence of lead, it has only slight retentive power upon the metal, possibly because the blood is ever changing and therefore rejuvenating itself, its corpuscles are short-lived, also that it is constantly eliminating the poison, while in the tissues generally, physico-chemical changes are less rapid, and there is therefore given greater opportunity for the metal to become more firmly linked to the cellular constituents.

The types of industrial poisoning which have the greatest interest for us are those where the amount of toxin received daily into the system is small, where elimination almost equals absorption, and where therefore poisoning is slowly induced. In many of these cases, symptoms of toxæmia may not arise for several years; so slowly, in fact, do the symptoms appear that the individual is not aware of his condition until some change occurs in his metabolism or he is attacked by some minor ailment.

Lead.

It is now several years since I remarked upon the storage of lead in a rather insoluble form in the body, also upon the absence of symptoms, until there have occurred chemical changes in the liquor sanguinis and the fluids bathing the tissues, whereby the deposited lead becomes soluble, thus favouring its reabsorption into the circulation. To the subject and the early harmful effects of lead upon the blood, Aub and his co-workers in Harvard University have given close attention, as also have Kehoe and Thaman of the University of Cincinatti, and P. Schmidt, of Halle, who hold, like many other physicians, that, by a microscopical examination of the blood of lead-workers, plumbism may be detected before symptoms develop, and when therefore, it is possible for further trouble to be averted. The relation of the blood to poisons passing through it are of a two-fold character; the blood may be little affected or physico-chemical changes are induced in it which affect its efficiency as an oxygenating and nutritive medium.

So far I have dealt mainly with lead, principally because, apart from iron and steel, lead is the metal which is most widely used in the industries, also because it has been the occasion of much ill-health among the workers. Most of its salts, too, have the power of precipitating proteins, as observed on mucous membranes, thereby exercising a protective influence compared with the corrosive effect produced by several other industrial poisons. Absorption of the metal is slow, so that time and opportunity are given for lengthened reaction to take place between the poison and the animal tissues.

Industrially, lead poisoning is seldom acute. When large doses of lead acetate have been swallowed by a healthy person, the symptoms which follow are less the result of absorption of the metal, than of the local effects of the lead compound upon the stomach and intestine. The intravenous injection of a neutral lead salt precipitates the proteins of the blood and may cause embolism. Harnack found in injecting lead-triethyl into the veins of animals that it became decomposed in the tissues and gave rise to symptoms of plumbism. Lead intravenously introduced

* Abridged from an address delivered to the Fifth International Congress for Industrial Accidents and Occupations in Budapest on Sept. 3rd, 1928.

nto dogs causes paresis and paralysis, diarrhœa, colic, remors, and convulsions. Harnack considered the diarrhœa o be the result of violent contraction of the intestinal wall, nd that this persisted even when no peristaltic wave was assing. In my own experiments I found, after death, liscontinuous portions of the small intestine, over lengths f 3 or 4 in., so firmly contracted as to have obliterated the ntestinal canal, and which appeared to me to have been ather the cause and explanation of the colic.

In order to ascertain the effects of lead upon the heart nd blood pressure, Sir Robert Bolam and myself carried ut a series of experiments in which we introduced a solution f a lead salt directly into the blood stream. Our experiments showed that the result of injections of lead in animals vas a general fall of the blood pressure.

There is a general opinion that workers in the lead industries in course of time develop structural changes in their rteries and have a high blood pressure. The numerous leaths among them from cerebral hæmorrhage lend weight o this supposition (but as the kidneys are prone to become liseased, inefficiency of these organs as a contributory ause cannot be ignored). We cannot quite place patients n whom symptoms of plumbism appear early in the same ategory with those who are the subjects of chronic lumbism, for in the latter structural changes have probably leveloped in the internal organs. One dose alone of lead ardly ever gives rise to symptoms, but if small quantities re repeatedly passed into the system through the alimentary canal or the lungs, chronic plumbism develops, indicating that absorption has taken place, and that possibly ome of the lead may have become locked up in the tissues nd from which it will be only slowly eliminated. The nternal organs in which, after death, the metal is found re the liver, kidneys, brain, and bones. Lead is eliminated y the kidneys, the intestinal epithelium, the mammary ecretion, and the saliva. Any effect, therefore, produced y lead is not so much due to the amount of the poison irculating in the blood at a particular time, nor to its eposition in the tissues, but, as Straub suggested, to the ummation of the injuries inflicted by its recurrent presence n the blood in infinitesimal quantities.

Arsenic.

In Great Britain, since harmless pigments have replaced hose containing arsenic in wall-papers and paints, industrial rsenical poisoning has considerably declined. In 1900 here were reported to the Home Office 22 cases of industrial oisoning due to arsenic, with three deaths; in 1926, five ases with three deaths; and in 1927, three cases with one eath. Pure arsenic is insoluble in water, so that if swallowed passes through the gastro-intestinal canal practically nchanged, although very minute portions might be conerted into arsenious acid in the stomach and intestines. he symptoms caused by its compounds are less due to the etal itself than to the ions of arsenious acid, which if wallowed in fairly large doses cause violent abdominal ain, vomiting, and watery diarrhœa, muscular cramps, eeble pulse, coma, and death. It matters little the channel y which arsenic gains entrance into the body for the same astro-intestinal events arise, showing that the mucous embrane of the alimentary tract is the medium whereby is eliminated, although the metal may be found in the air and also be a cause of pigmentation of the skin, as has een observed in chorea patients treated by increasing oses of liquor arsenicalis. Taken in medium doses over a arying length of time, it produces peripheral neuritis; an pidemic occurred in England a few years ago in beerrinkers, the poison being traced to the glucose in beer hich was obtained by sulphuric acid methods from iron yrites containing arsenic. Yet, even to such a dangerous etal as arsenic, tolerance can be established by taking raduated quantities, as was shown a few years ago by the rsenic-eating peasantry of Styria and the Tyrol. These ill-men, swallowing arsenic in small but increasing doses, tated that it enabled them to climb the mountains with ss effort, and that it improved their respiratory powers, hile their women-folk believed that it improved their omplexion. The practice did not appear to exercise any armful influence, for these people lived to a great age ithout exhibiting any signs of ill-health.

The worst effects of arsenic as an industrial poison which have seen have been not so much upon the internal organs s upon the skin. This was especially so upon the hands nd fingers, also upon the external reproductive organs of en engaged in mixing colours, of which Scheele's green rmed a large constituent. The skin of the fingers and hands as ulcerated, often down to the bone; the ulcers were angry-oking and painful.

The presence of arsenic in soot is regarded as the cause f chimney-sweep's cancer, also of malignant growths upon he hands of gardeners who use soot for potting and other urposes.

Arseniuretted hydrogen, when inhaled, rapidly induces ckness and vomiting, followed several hours afterwards by jaundice and hæmoglobinuria or hæmaturia. The breaking-down of the red blood corpuscles is so complete that the hæmoglobin becomes incapable of carrying on its respiratory function, while the liver and kidneys are severely taxed in regard to the elimination of the disintegrated products.

Mercury.

In the industries subacute and chronic forms of mercurial poisoning may be met with. Of the organs primarily affected in the less acute forms of poisoning the salivary glands call for mention. They are stimulated to great activity, the gums are swollen, the teeth loose, the breath fetid, and on the buccal mucous membrane small ulcers may be observed. The submaxillary glands become enlarged, mastication is difficult and painful, there are diarrhœa and loss of appetite, followed by pains in joints and limbs. To the psychical troubles, of which a sense of timidity and loss of self-control before strangers are noticeable features, the term *Erithismus mercurialis* has been applied. Voluntary muscular movement becomes inhibited. In addition to the inordinate flow of saliva, there are muscular tremors, at first mainly of the muscles of the face and hands, but if the individual continues to follow his occupation the tremors become general and render the individual helpless. In the company of Dr. Giglioli, of Turin, I had the opportunity a few years ago of visiting the mercury mines on Mont Amiata, and of witnessing some unusual signs and symptoms. Several of the men were so much affected through inhaling the fumes of the metal that, if during the act of walking, and this generally with a staggering gait they were called upon suddenly to stop, they could not immediately arrest their progress. In attempting to do so they were either precipitated forwards or swayed excitedly forward and backwards. There might be no tremor observable when the body was at rest, but tremors became immediately apparent, equal in range to those observed in disseminated sclerosis, when slight effort was made. So violent may the movements subsequently become, or so extreme the muscular paresis or paralysis, that many of the affected smelters are ultimately rendered completely helpless; they can neither feed nor dress themselves. Workers in mercurial compounds not infrequently have albuminuria. With their swollen gums, fetid breath, and muscular tremors, the men present a broken-down appearance and have an unhealthy, sallow look.

Phosphorus.

As far back as 1870 the sufferings of lucifer match-makers had attracted public attention. In 1872 Finland, in 1874 Denmark, in 1897 France, in 1898 Switzerland, and in 1901 the Netherlands had prohibited the use of white phosphorus, but the regulations had not the desired effect, nor was any united and organised effort made to secure this object until Switzerland, in 1906, invited the various countries to attend a meeting in Berne, known as the Berne Convention, and at which the countries represented unanimously agreed to the prohibition of the dangerous metalloid. French chemists had found in sesquisulphide of phosphorus a safe substitute for the dangerous form, and wherever it has been used phosphorus necrosis has disappeared as an industrial disease. To France, therefore, belongs the credit of having made possible the replacement of a harmful by a harmless chemical agent in this important industry. It was not, however, until 1919 that India and Japan joined the Convention, but even as late as 1923 China had not done so. In 1925, according to the *China Journal of Science and Arts* of February and March of that year, there were 15,000 persons employed in lucifer match factories using white phosphorus. In January, 1925, China definitely prohibited the use of the harmful material, so that with her entrance into the Berne Convention there is now the probability of the disappearance of a painful occupational malady in the Far East.

Radio-active Substances and the Health of the Workers.

Three years ago my attention was drawn by Dr. F. L. Hoffman to the occurrence of necrosis of the jaw-bone and of aplastic anæmia in young women engaged in painting numerals on illuminated watch and clock dials. There had occurred six deaths and there had been reported seven cases of serious disease.[2] Radium salts formed the basis of the luminous material; one of the manufacturing firms used mesothorium. In painting the numerals on the dials the girls were in the habit of pointing with their lips the camel's hair brushes, and although each of the workers was given a bottle of distilled water in which to wash the brush before putting it between the lips, they disregarded the provision. The girls had followed the occupation for three years or more. Exposure to large amounts of radio-active material is followed by changes in the blood of the workers, microscopical examination revealing a reduction

[2] Monthly Labour Review, U.S. Department of Labour, May, 1926. Pp. 20.

in the number of polymorphonuclear and lymphatic corpuscles. The leucopenia is pronounced. There is also a degree of anæmia suggesting a diminished output of red blood corpuscles from the bone-marrow. The colour-index, however, remains high. Many of the women in this occupation complained of headache, malaise, tiredness, and a sense of the need of more sleep, nervous irritability, and disordered menstruation, but the morbid condition which specially attracted attention was necrosis of the jaw-bone. For information of these cases we are indebted to a report furnished by Dr. Cecil K. Drinker, Dr. Martland, and others. The necrosis closely resembles the diseased bone found in phosphorus poisoning. An interesting point in regard to exposure to radio-active compounds is that the disease which develops may lie latent for a few years before showing its destructive effects upon the teeth and jaw-bone. From the outset these agents affect the blood and blood-making organs; in small doses they temporarily increase the numbers of red and white corpuscles of the blood, and this increase is followed, if the exposure continues, by a destruction of the white and by a diminished production of the red corpuscles, hence the consequent anæmia. In September, 1927, I examined in New Jersey five of these women dial painters; three of them could hardly walk or sit on a chair, except in a slanting position with limbs fully extended. Osteitis and strong adhesive fibrositis of the hip-joints prevented abduction of the limbs. In some of the women small areas of exposed portions of the lower jaw-bone could be seen and felt in the mouth.

ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

THE Seventy-third Annual Exhibition of the work of this Society's members now being held at 35, Russell-square, London, W.C., shows vividly the degree of perfection which photography, both utilitarian and artistic, has attained. Colour photography has made great strides and many fine stereoscopic colour transparencies were on view; on the scientific side it is of great value in many fields. Several spectra of salts, glass and other substances photographed by polarised light illustrated the diacritical value of this method, which also serves to check the quality of artificial sunlight. One interesting use of monochrome photography is to test the efficiency and freedom from glare of motor-car headlights, and the general Motors Corporation exhibited an excellent series of photographs to show how this was done. Eastmans displayed their Panchromatic film and Wratten light filters, which immensely facilitate the reproduction of many coloured objects, such as paintings. Of especial medical interest was a fine series of X ray photographs by Kodak Ltd. and Ilford Ltd.; among others taken by Dr. J. H. Mather, one illustrated a gall-bladder after the oral administration of sodium tetraiodo-phenolphthalein. The life-history and minute structure of the green-house fly was depicted in five frames of microphotographs by Dr. G. H. Rodman. In addition to pictures many cameras and pieces of apparatus were on view. The exhibition remains open until Oct. 13th.

NEGLECT OF VACCINATION IN IRELAND.

FROM recent reports in the local press it would seem that, notwithstanding pressure from the authorities, there is still a good deal of opposition to vaccination in some areas in Ireland. At a recent meeting of the Fermoy (co. Cork) Urban District Council a letter was read from the Department of Local Government and Public Health stating that unless the Council took the necessary steps to make sure of compliance with the Vaccination Acts, the Minister would have no option but to institute proceedings to compel the Council to perform its legal duties. When the list of defaulting parents was read out, it was noticed that it contained the names of the chairman of the Council and of at least one other member. At Enniscorthy, co. Wexford, the urban council was directed by the Minister to institute legal proceedings against those who did not comply within a reasonable time after notices to carry out vaccination had been served on them. No action was taken, the chairman declaring that the serving of notices was as far as the Council could go.

PTERYGIUM IN MADEIRA.

THE origin of the peculiar encroachment of the conjunctiva on the cornea known as pterygium is still something of a mystery, some doubt having been thrown on Fuchs's plausible explanation that it is a further stage of pinguicula, but the circumstances under which it arises are fairly well known. Rare in England, it is common in dry climates with sandy soils, and among farmers, threshers, ranchmen, and others exposed to the elements. In the United States it is much more frequent in the south-western than in other areas; heat, dryness, wind, and exposure to sunlight and alkaline dust are there regarded as predisposing causes. Coming nearer home, the island of Madeira has been mentioned as a place where the condition is endemic; this is twice affirmed in the French encyclopædia of ophthalmology published under the auspices of Lagrange and Valude. Dr. Alfredo Rodrigues read a paper before the Third National Congress of Medicine, held at Lisbon recently, to controvert this statement. Pterygium, he admits, does occur in Madeira, where the hygienic conditions are neither better nor worse than in other marine resorts, but in his experience it amounts to less than 15 per cent. of all ocular affections met with on the island. This is much less than the frequency quoted by an English doctor, Heineken, a hundred years ago. The influence of high insolation may be present in Madeira, but the factors of high wind and dust are not. The town of Funchal itself is situated in a sheltered amphitheatre of mountains, and even the sun's rays are tempered by the nebulous atmosphere of the gulf stream.

SWORD-SWALLOWING.

AN advertisement in the personal columns of the *Times* of Sept. 12th for a sword-swallower "required to assist doctor in experiments" is a reminder that sword-swallowing has its dangers, although there may be few cases on record in which it has led to the death of the performer. Gross perforations of the œsophagus are, of course, uncommon but considerable damage may be done by minor injuries. In 1885 Dr. Charles Gross reported the case of a man aged 30, who conjured in public-houses as a recreation. Two days before admission the sword hurt him more than usually, and on withdrawing it he spat a little blood. His neck began to swell and swallowing became more difficult and painful, until he died suddenly three days after admission to hospital. Post mortem, there was no sign of any perforating wound, though a little excoriation was to be seen at the upper and posterior part, but the outermost coat of the œsophagus and the surrounding tissues were a diffused abscess extending from the back of the pharynx to the diaphragm. The news of this man's death induced two other sword-swallowers to consult Dr. Gross about the dangers of their curious profession. They were both in the habit of swallowing swords 21½ inches long, the blade tapering from 1¼ to 1 inch, straight, heavy, thick, smooth with well rounded edges and point. They gave a demonstration which he described thus: "Straightening the passage by well elevating the chin, then putting the point of the sword well to the back of the throat, with one thrust they pushed it down as far as the hilt." Both of these experts acknowledged that they frequently hurt themselves and one of them had been in St. Thomas's Hospital with an injury to the œsophagus, apparently a lesion of the mucous coat of the lower part.

PLASMOQUINE IN MALARIA: A CORRECTION.

IN Dr. Manson-Bahr's paper on the Therapeutic Action of Plasmoquine, published in our issue of Sept. 8th (p. 496), the statement is made, under the heading "For Benign Tertian and Quartan Malaria" that "treatment should extend over a further 44 days, composed of four separate weeks' treatment (making five weeks in all) of *12* tablets of plasmoquine compound daily with four days' interval between each week." In this sentence the figure 12, which we have italicised, should read 6.

UNEQUAL PUPILS.

M.R.C.S. writes: For years I have been in the habit of shaving in my bath, but have only recently taken to using a mirror. Since doing so I have noticed that my pupils, equal before I begin, become unequal during the act of shaving—the left much larger than the right. Within half an hour they return to equality. I am told I am physically sound and have no aneurysm. I have no explanation to offer, other than a very localised fear reflex due to performing a risky operation whilst on an insecure foundation. I should be interested to hear what other explanations occur to your readers.

MEDAL FOR A MEDICAL MAN.—Dr. J. H. Sheldon, of Wolverhampton, has been awarded a bronze medal by the French Government for courageous rescue work on the Aiguille du Petit Dru in the Alps.

A WOODEN HOSPITAL BURNED.—About one-half of Driffield Isolation Hospital, which consisted chiefly of wooden hutments of the army pattern, has been burned down. The fire was caused by a rubber mat hanging on a bathroom wall falling upon a lighted gas ring, and spread so rapidly that in five minutes all the wards were in flames. Of the 60 beds only 18 were occupied by patients, suffering from scarlet fever, typhoid, and diphtheria, and they were all safely removed to a new brick block which had just been completed. It will be remembered that it was only at the end of April last that two wards at the King Edward VII. Hospital at Windsor were burned.

Lettsomian Lectures

ON

RHEUMATIC HEART DISEASE IN CHILDHOOD.

Delivered before the Medical Society of London

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LECTURE III.*

Delivered on March 7th, 1928.

THE first general principle in the treatment of heart disease in the child is that rheumatic disease of the heart is only one manifestation of a general disease, and the problem is not a purely cardiac question. Success must turn on a general knowledge of acute rheumatism. The second is that as far as possible convalescent treatment should be linked up with well-known central hospitals whenever the private practitioner is not in a position to take their place. There will be a great loss of purpose if a heavy drift takes place towards isolated convalescent homes. The third is that, without interfering overmuch with the liberty of the subject, increasing organisation should give all cardiac cases after childhood careful supervision in the factory, the large business-house, or elsewhere. I hold that we possess no drug or other treatment which has a specific action upon rheumatic morbus cordis, though I do not expect general agreement with this view. Lastly, we must realise that our problem at the moment is very much more than the prevention of rheumatism and rheumatic heart disease, for it includes the amelioration of the latter. In the present state of our knowledge we have not failed when a child has developed organic disease of the heart, but we fail if we do not exert all our resources to secure for the child a full convalescence and do not make every effort to prevent further attacks and to indicate reasonable occupations for later life. The problem, in general, resembles that of tuberculosis, but there is more encouragement, because at puberty the incidence of heart disease in rheumatism tends to diminish. There must be further laboratory and clinical research, for we cannot cease from efforts to decide the exciting cause, from arriving at decisions upon the nature and frequency of predisposing causes, and from investigations into a more successful medicinal treatment.

PREDISPOSING CAUSES.

There is much interesting work in progress upon the predisposing causes of acute rheumatism, and many differing views upon their relative importance. One point which I would emphasise is that acute rheumatism is particularly likely to follow when a spell of dry warm weather changes to cold winds and wet. It is not the dry weather, or the wet, upon which I lay the great stress; it is the sudden atmospheric change. Dry weather tends to dust formation and sore-throats in the large towns, and sudden cold and wet, in my experience, develop the rheumatic infection.

A good deal of attention has been directed to the infrequency of acute rheumatism in the well-to-do, but it is only a relative infrequency, for I have seen the disease occur severely in prosperous families. Again, it has been pointed out that it is not the poorest in the social scale who suffer, but those who are not actually necessitous. To explain this I fall back on my view that nervous tension is an important predisposing factor, and I believe that this is a salient feature in that particular class of life. These children often come from small families and have parents who feel the full stress of keeping a position above the fringe of careless poverty. The children are anxious to shine at school and at home, and do not possess the stolidity that many of the very poor show. I believe that damp, low-lying localities are harmful. I have never thought that damp localities or damp houses, or damp feet, are actual exciting causes, but they undermine the general health, and I am confident that the rheumatic child fares badly in such surroundings and that the rheumatism particularly tends to become intractable. I have seen too many examples to be disturbed by any statistics. I also believe that defective sanitation in a house is important as a predisposing cause.

The question of diet seems to me one which should be inquired into further in a large convalescent hospital. It has never attracted me as an important factor, and I have sometimes thought that it must be an echo from former days when gout was so much in the minds, and sometimes bodies, of our profession. Nevertheless a careful investigator, with an opportunity for prolonged inquiry, might well upset such a general impression and throw some light on this problem. For instance, Dr. Arbour Stephens has suggested that acute rheumatism is dependent upon a calcium deficiency. We certainly cannot allow any field to be unexplored in such a subject as acute rheumatism.

One statement that seems to me true, though I know it has been doubted, is that chorea is much more frequent in the elementary than in other schools. Chorea is a nervous manifestation of acute rheumatism frequently associated with heart disease, and we must strive to explain this frequency.

Our climate is in accord with the disease, for it is very variable and shows many manifestations, and its vagaries recur year in, year out. Local epidemics of acute rheumatism are very interesting and require further investigation. I have never been in the position to investigate the accurate details, but we shall now be on the watch for them and may learn some new facts. The disease is undoubtedly more frequent and more severe in some years than in others.

METHODS OF INVASION OF EXCITING CAUSE.

If we do not know the exciting cause, how can we detect its path of entry into the body? We do know that streptococci from inflamed tonsils will produce heart disease on experimental injection into the veins of animals, and that in children, particularly the very young, heart disease may sometimes follow a tonsillitis as dramatically as in an animal. I have also seen it follow immediately upon the old operation for guillotining tonsils and after enucleation.

Recently a girl was under my care in hospital for an attack of rheumatism with mitral endocarditis following tonsillitis, and the tonsils were obviously unhealthy. She made a good recovery. It is my rule to allow such cases to make a prolonged convalescence before operation, so three months later, after a change into the country, the tonsils were enucleated by a master hand. A fortnight later she was readmitted with severe pericarditis and eventually left hospital a cardiac invalid.

Another striking case came under my notice in June, 1926.

A school-girl, aged 13, who had suffered from a sore-throat and had enlarged tonsils and an attack of acute rheumatism with mitral disease, made a good recovery. Three weeks later the tonsils were enucleated, and three days after this the temperature rose and she rapidly developed a dangerous carditis with pericarditis which was almost fatal.

Incidentally, I think this case was a striking support of the streptococcal theory of the disease, for it began on the third day, which in our experimental experience was a frequent event with a virulent culture, and it reproduced precisely the events which happen when a rabbit is infected by injection. It is my belief that in such a case the child is directly inoculated with the micrococci through the raw surfaces caused by operation at a time when the susceptibility to infection is still high,

* Lectures I. and II. appeared in THE LANCET of Sept. 15th and 22nd respectively.

for we must admit that, though a child may appear to have recovered from an attack of rheumatism, we are still ignorant of the completeness of recovery.

A rather remarkable case was that of an only child, with acute pericarditis and aortic and mitral endocarditis, a clear history of sore-throat, and large unhealthy tonsils. This boy had repeated attacks of fever and tonsillitis while in hospital, but he was so ill that I was afraid to advise operation, and repeatedly delayed. Eventually he was taken from the hospital by his parents.

It seems clear, from experiment, that the tonsils must destroy infection when they are healthy, but the difficulty is to ascertain when they cease to act as a protection and become a danger. The only solution that I can see will be from collective experience, based upon the observations of many careful investigators extending over a considerable period of time. So far, I think the balance is in favour of the opinion that the removal of unhealthy tonsils by enucleation tends to diminish the frequency and severity of further attacks, even if it does not prevent them. Dr. R. Miller is of the opinion that chorea, a minor evil, rather than heart disease, is the most frequent manifestation when rheumatism again attacks a child after removal of the tonsils. There must soon be at our disposal a great mass of evidence on the number of cases of acute rheumatism and heart disease that develop in children who have had no obvious signs of the disease before their tonsils were removed. When this is published it will give us a much more definite basis upon which to build our views upon this most important question. Because removal of the tonsils does not prevent further attacks when once a child has become infected, it does not follow that removal would not have prevented the original attack altogether. Once infection has taken place, we are not yet in a position to say when it has been destroyed in the tissues of the body or where it may be hiding. If a child has had an attack of rheumatism with evidence of tonsillitis, has apparently recovered and the tonsils seem healthy, and the tonsillar glands are not enlarged at all, or only to a slight degree, ought we to advise their removal as a precautionary measure or not? If so, should we operate at the end of the acute illness or wait until the child has made a thorough convalescence? There is considerable difference of opinion upon these questions, and it is for this reason that I am anxious for evidence upon the occurrence of first attacks of rheumatism in children who have already had the tonsils enucleated; if this be frequent it must influence our procedure and make us cautious. I endeavour to judge each case individually, but the judgment, however well intentioned, may very easily be faulty because of the intrinsic difficulties. I do not think there is any practical problem in the prophylactic treatment of rheumatic heart disease that requires more immediate attention than the correct line to take with the tonsils; routine operation requires complete justification.

I have not been impressed with the origin of acute rheumatism from dental disease in childhood, and am not convinced of the frequency of an alimentary infection. Many rheumatic children, it is true, suffer from abdominal pains, chiefly epigastric; some suffer from colitis and some from acetonæmia, but these may all be the results of the established disease and not evidence of primary foci. There is clearly room for further investigation upon these questions.

Medicinal Treatment.

The medicinal treatment of rheumatic heart disease introduces another question upon which I think we, as a profession, ought to arrive at some definite conclusion. Much has been written upon the specific action of salicylates in acute rheumatism, but if by specificity is meant the action of a drug which, if used skilfully, produces the clear-cut results of a true antidote, like quinine in malaria, then I am convinced that salicylates are not specific. In recent years I have abandoned their use in the most severe forms of carditis in childhood. In some respect I have had an almost unique experience of this drug, because I was working at Great Ormond street on cardiac dilatation when the late Dr. D. B Lees was carrying out his well-known investigation on the use of large doses of salicylate of soda for acute rheumatism. It was then that I saw examples of its toxic action, which led to the introduction of the well-known formula combining it with double the dose of bicarbonate of soda. In the Encyclopædia of Medicine, published in Edinburgh in 1902, I pointed out the severe depression, dangerous vomiting, and fatal coma that might result from large doses of this drug in childhood, and my observations were corroborated by Prof. F. Langmead. I am now only concerned with rheumatic heart disease in the young. The value of the researches of Dr. Lees upon the use of this drug in adult rheumatic arthritis has met with ample proof, and its value for the arthritis and pains in childhood is unquestionable. For many years I used the drug for rheumatic heart disease in acute cases, in chronic cases, and as a prophylactic, but to-day I am not prepared to say that it exerts any specific action, but am of opinion that it is a *dangerous drug when given in large doses to fragile rheumatic children.* It introduces into the severe cases of carditis difficulties such as vomiting, depression, pulmonary œdema, and even coma. The temperature certainly may be lowered, but fever is very rarely any real danger, and the most virulent cases of rheumatic carditis may be practically afebrile. The only unexpected death I have had in the last five years from rheumatic heart disease was that of a little girl admitted for slight mitral endocarditis. The temperature was obstinate but not high, and my house physician, with the very best intentions, gave salicylate of soda grs. 20 every four hours—not a large dose to the enthusiast. I saw the child three days later for vomiting which, in spite of all efforts, proved fatal. So great a hold, however, has this treatment on the minds of our profession, that it is most difficult to break through its tradition. There is no alternative treatment with any claim to the term specific, and if salicylates are specific, they should logically be pushed in the severe cases.

The Ethyl-ester of Methyl-phenyl Cinchoninic Acid.

Fortunately, I have found a cinchonic acid preparation, an ethyl-ester of methyl-phenyl cinchoninic acid called "tolysin," which has some definite action in rheumatism and which is admittedly less toxic than the salicylates. I do not for a moment hold that it is specific, but it has enabled me to treat the worst cases of carditis without the anxiety of drug complications, and has satisfied the sceptic that I have at least been attempting to treat the disease. My great object has been to find a treatment which would not complicate the difficult problem of the management of severe carditis. Not only have we often to treat very nervous children, but in addition to the dangers of carditis there may be arthritis, pleurisy with or without effusion, massive collapse of the lungs, broncho-pneumonia, and chorea. In very rare cases acute œdema of the lungs, beginning, like "renal œdema," at the apices, may occur. This I have only seen in four cases, all of which had been treated with salicylates, but the number is too small to incriminate the drug wth certainty. It is a most dangerous complication, though not always fatal.

For success in the treatment of such a perilous condition as severe carditis I consider it imperative to diminish any tax on the resources of the child, and there are two clear lines of guidance. One is never to attempt paracentesis pericardii unless absolutely assured that the quantity of exudation is the real danger; the other is to explore the pleura first if doubt exists whether the distress is the result of a left pleural effusion or a pericardial effusion. If we push drugs like digitalis or salicylates, which produce vomiting, we imperil our success, for careful

eeding and the taking of nourishment are essential. 'o explore unnecessarily is to add to the dangers, ut to calm and obtain sleep with small doses of epenthe, and possibly some bromide, is invaluable. 'olysin has seemed to me, in small doses (grs. 5–7 very four hours), to improve the general condition, nd certainly has never done harm.

Oeller in 1911 showed that the action of phenyl-inchoninic acid was akin to that of the salicylates, ut, as it also produced similar toxic effects, the asteless and less toxic ethyl-ester was introduced. n 1912 Bendix employed the ethyl-ester of methyl-henyl cinchonic acid ("tolysin") for rheumatism, nd Chace, Myers, and Killian, in 1921, obtained good esults with it is America. Boots and Miller, of the Rockefeller Institute, made a further study of its se and dosage in 1924, as had Hanzlik, Scott, Veidenthal, and Fetterman, in 1923. They found t a safe drug, though not so potent as the salicylates. Most of the observations were made on acute rheu-natism in adults, and doses from 7–15 g. were used in 4 hours. In 20 cases, in which very large and long-ontinued dosage was employed, the only toxic ffects were buzzing in the ears, headache, vertigo, ausea, and vomiting, this last in three cases. All he evidence I could collect when I began to use the rug for severe carditis in childhood pointed to its ight toxic effects and definite action in rheumatism. 'or these reasons I selected this compound, but had he greatest difficulty in getting it, and more than nce failed to obtain it at all, so I bring before you o exhaustive study.

Illustrative Examples.

The following are examples of patients not treated ith salicylates, but with this drug. I have treated l cases of great severity.

Case 1.—Female, aged 10. Enucleation of tonsils had en done at 5 years. Fourteen days before her admission hospital, vomiting and pains in the chest and abdomen eveloped. There were mitral disease, dilatation of the heart, ericarditis, and massive collapse of the left lower lobe, reptococci were isolated from the blood by Dr. D. Nabarro nd endocarditis produced experimentally with the culture Prof. Wright at University College Hospital School. xcellent recovery. Salicylates were never used, but tolysin" was given. Seen two years later, when at school, e was leading a normal life with stable heart and mitral stolic murmur.

Case 2.—Male, aged 8. Had rheumatic fever at 6 and 7 ars; the heart was damaged as a result. Fourteen days' story of generalised pains. Admitted with acute dila-tion, pericarditis, and left pleural effusion. Treated roughout with 'tolysin." Good recovery after extreme ness.

Case 3.—Male, aged 4½. Admitted to hospital May 16th, 27. Extremely anæmic, with numerous large nodules d profuse sweating. There was severe arthritis, causing me contraction of both knee-joints, great cardiac dila-ion, general pericarditis and mitral endocarditis, massive llapse of the left lung, and chorea. The mental state was e of extreme nervousness, and later of actual disturbance mentality. It is almost impossible to conceive a more ere case of virulent rheumatism in a child so young. eated throughout with tolysin and most skilfully nursed, s child is now at the country branch at Tadworth. The dules have mostly disappeared, and though he is still ort of breath the pericarditis has cleared up. The heart ends one finger's breadth to the right of the sternum d one finger's breadth to the left of the left nipple line. ere is a mitral systolic murmur at the apex. He is gaining ight and strength. It is my belief that this child would e certainly died if any attempt to push salicylate of a as a specific remedy had been attempted.

Emergencies in Pericarditis.

Occasionally a large pericardial effusion does occur a child under 12, and the fluid may push forward intercostal spaces and give all the other classical ns. Ought we to aspirate, or, bearing in mind the fi-rino-plastic character of the exudation, should open and drain the pericardium? I have seen h methods used and each seems to me to have place. If the exudation is very rapid and copious, pressure great, and the patient very ill, it has been experience that the exudation is more fluid than usual and that paracentesis will be sufficient to tide over the crisis. In other and more gradual cases, incision of the pericardium is preferable, as it enables the more fibrino-plastic exudate to escape. The operation which has seemed to me best is the abdominal route with removal of the xiphisternum.

I have seen this operation done in an earlier stage, when there is little exudation, with the idea of getting rid of a toxic fluid. My view of the pathology of the pericarditis as commencing in the subendothelial tissue does not make me optimistic about the results of this measure, and the operation, not in itself serious, is a formidable one for a child with carditis. The results have not impressed me, and in any case we should need to follow up such a step with some specific serum or vaccine.

Grave difficulties arise if, by mistaken diagnosis, a dilated heart with an adherent and thickened pericardium is explored, whether by paracentesis or incision. Only a surgeon who has had the misfortune to undertake such a case can realise how impossible it is to know where to stop. In one case the heart cavities were explored in three places and the child, curiously enough, improved greatly, but this is exceptional, and it is no light thing to puncture a cardiac wall much damaged by myocarditis.

I have never advised Braner's operation for stripping the pericardium in a rheumatic case, though good results have been reported. The first published operation of this kind in this country was done for me by Mr. Wilfrid Trotter, but the condition proved to be tuberculous. There was wonderful improvement, but death occurred four years later from tuberculous pleurisy. Another equally remarkable operation was done by Mr. George Waugh on a young man who was seen by Sir William Willcox and myself; this was a case of recently adherent pericardium due to a chronic septic infection. The result again was remarkably good, although the patient was apparently in extremis. The rheumatic children I have had under my care have been either too feeble or had too severe valvular disease to permit me to feel justified in risking operation.

Convalescent Stage.

It must be apparent that for the treatment of heart disease sufficient time must be given for the heart muscle to recover tone and for the nervous system to be strengthened by country air and quiet. Gentle education of the mind proves also a great assistance. We have a most treacherous disease to handle and delicate children to treat, and for these reasons no ordinary convalescent home can answer the purpose.

It is some 15 years since I brought forward reasons for special convalescence before the Association of School Medical Officers, and in "School Hygiene" for August, 1912, I ventured to write: "In years to come I believe medical supervision of school children, combined with the efforts of medical officers of health, both supported by the skill and care of general hospitals and assisted by special convalescent homes, will be the means of prevention of much chronic heart disease," and the pioneer efforts of the Invalid Children's Aid Association deserve a special mention.

To-day there is a general recognition of the need for special convalescent methods. Such a step means a considerable outlay of money, and those who provide this have the right to know whether there is a good return, in the relief of suffering and greater possibilities for a useful life in the future, where previously the State lost good citizens and the skill, care, and money spent on the illness in the city hospital were often frittered away. The real object of the special convalescent hospital is to give a child the necessary time to recover as thoroughly as possible from a carditis. I have never thought or suggested that it is a new method for the cure of rheumatism, but it is a means of correcting a serious fault in our therapeutics, a result of the necessity for keeping the beds in the parent hospitals free for acute cases. In

addition, it is possible in such hospitals to add much to our knowledge of the life-history of rheumatism and rheumatic heart disease. It would, however, be dangerous to send severe acute carditis to such an institution. Children who are already hopelessly damaged by the scars of former rheumatic attacks, who have an adherent pericardium and grave valvular lesions and can only exist as complete invalids, are not going to be so much benefited by this treatment as to make their occupation of the beds economically sound.

I would, however, lay down no hard-and-fast lines upon these questions, for circumstances differ in various localities. Again, I would have no hard-and-fast time-limit for the stay of a child in hospital, but, choosing an enthusiastic and sagacious medical officer as the head of the institution and supporting him with a capable nursing staff, I would then leave it to him to decide the question.

Acute and passing dilatations of the heart will have time to recover from the immediate damage and also to regain tone. The slight mitral lesion and the early aortic and mitral lesions will have time to compensate thoroughly. A severe acute carditis will be given the prolonged rest and graded exercise which are indispensable. On the scientific side there is much to be learnt about the recovery of a damaged heart, not only from the study of the heart, but from a study of the child. We all recognise persistent fever in the rheumatic child, and at the back of our minds we suspect some activity in the cardiac lesions or some absorption of infection from a local focus. In these hospitals we shall eventually learn more about this question; we may find, for instance, a vaccine that will be helpful or that in some patients the fever is not an indication for continual rest. Light will be thrown upon the degree of recovery possible in heart disease. I do not mean the mere estimation of exercise tolerance, but the ability to lead a normal life. In these hospitals, if anywhere, we shall learn more of the history of mitral stenosis and of atmospheric influences. There is some difference of opinion on the question of the admission of chorea in the recovering phase. I think that these cases are most suitable when they can be accommodated, but we must be patient until doctors and nurses are convinced that chorea is a rheumatic and not solely a nervous complaint. In some of the hospitals, also, it is to be hoped that there will be opportunities for skilled cardiologists to carry out strictly scientific researches.

It is my hope, too, that one day in this great city there will be a centre for research and the coördination of research on the whole problem of rheumatism, a centre from which indications for lines of advance will be forthcoming and from which trained workers will be sent to the various clinical institutions where cardiac cases are congregated. The great prevalence of rheumatism would make such a step justifiable as soon as this country is able to recover from its financial stress. In no other way can we avoid a great waste of time and energy from scattered and incoördinate attempts at solving the many problems involved.

It will be advantageous if girls can be admitted for convalescence up to the age of 14, for then we may be able to learn more about the nervous disturbances that occur at that age, and their influence upon those difficult cases of myocardial weakness that sometimes result from acute rheumatism without valvular lesions. If disturbances of the thyroid and other endocrine organs take a part in the rheumatic infection or produce unusual disturbances in the rheumatic patient, it is in these institutions that their effects can best be studied. In particular, we need to know more certainly the real necessity, in disturbances of the cardiac action, for a progressive or more cautious line of treatment. These are some of the special advantages that I believe will accrue from this method of supervising the child who is convalescing from rheumatic heart disease.

There will naturally be difficulties. The choice of suitable cases must of course depend at first upon the accommodation available. While beds are scarce, we must use them for cases of early heart disease in which we have every hope of obtaining good and lasting results. This is not a simple problem, for a physician at a parent hospital may have under his care a child with active rheumatism and acute dilatation of the heart, which disappear as the case runs a favourable course. When the child is transferred it is not easy for the physician in the country annexe to realise that there has been any trouble at all. Yet this is the very case in which cautious progressive training of the heart is most important. It will therefore be very needful for the report from the private doctor or the parent hospital to set out clearly the facts of the active phase of the cardiac weakness. In all cases, indeed, the activity of the rheumatic attack before admission to the country annexe must be the chief point.

The certificates that have to be filled up for admission to such an institution need some thought. The questionaire can easily be made too long and tiresome, the certificate fail to get filled up, and the child lose its chance. The problem of the rheumatic child affords a splendid opportunity for the great sections of the medical profession, the general practitioner, the hospital physician, and the officials of the Ministry of Health, to draw closer to one another. The official can give way a little to the other branches of the profession and make his certificate as short and yet to the point as is consistent with safety, and in return the others can make it a duty to see to the signing of the certificate. The result will be that the sick child will have its chance.

I think we must be very careful in collecting evidence upon what are to be called hopeless and therefore unsuitable cases. Let me give two examples.

A little girl of 5 had a severe attack of general pericarditis with mitral disease, and was desperately ill, suffering from repeated attacks of anginal pains which threatened immediate death. Her condition seemed hopeless and her home surroundings were most unsuitable. As a last hope, and admit with a very uneasy conscience, I obtained her admission to the Heart Home at Kurandai. My colleagues were extremely forbearing to me and kept the child—entirely against their own judgment, I felt—until she was foolishly removed by the parents when much improved. A year after the illness she came back to me with an obviously adherent pericardium and a heart which one could not expect to make a good recovery. The child was, however, marvellously better, had no anginal attacks, and was living a happy life under invalid conditions. If such a hopeless case can do as well as this—and it was for me a test case—I am sure we must be most careful, as accommodation increases, before we condemn any child's heart as incapable of useful recovery, still more of recovery sufficient to make a short existence bearable.

The other case, treated at home by good parents, had been under my care first with severe aortic and mitral disease, then later with what seemed must be a fatal pericarditis. This boy lived to be 21 years of age and did four years steady work as a clerk without any breakdown until the dreadful and mysterious malignant type of endocarditis developed and proved rapidly fatal.

I cannot, however, pretend to believe that treatment in the best convalescent hospital will prevent children from having further attacks if they return to surroundings likely to produce them. As our knowledge increases, we shall learn to restore these children to the best health possible, and many will probably resist further infection. We shall not, however, succeed with them all until we know the whole history of causation; should this prove to depend upon some atmospheric conditions we cannot control, or surroundings which we cannot alter, there must remain a certain percentage of relapses. Here comes in the great need for improvement in our medical treatment by medicine, vaccine, serum, or other methods yet to be discovered.

Some Records from Kurandai.

I am very much indebted to my friend and colleague Dr. B. E. Schlesinger, who is acting physician to the Heart Home of the I.C.A.A., at West Wickham, for an analysis of the results from the previous

Heart Home at Kurandai. This home was a pioneer effort in this country at open-air treatment, and was carried out under considerable difficulties.

Three hundred and ten children, varying in age from 3 to 14 years, were treated from 1924 to 1926. The duration of stay was from three to 12 months. All were rheumatic children; many had suffered from previous attacks. Three had severe relapses. One, with arthritis, tonsillitis, and pericarditis, was discharged improved; two, with tonsillitis, pneumonia, and pericarditis, died immediately after removal from Kurandai. There were two cases, both severe on admission, who had slight relapses with passing pericarditis. Eleven cases had some recurrence of arthritis, and all recovered. Five cases developed chorea, four of them having suffered from previous attacks. These relapses occurred most frequently in the winter months. Later histories were obtained in 153 cases, but the period of time between 1924, when the Home was opened, and December, 1927, when this analysis was made, is too short for the observations to be of outstanding value. Ninety-three were reported to be "well," 31 to be in "fair health," 3 to be "ill," and 10 to have died (including the two cases which have been already mentioned). Sixty-four were at an elementary school, 35 at physically defective schools, and 22 were at work.

The history of relapses after leaving the Home is not so satisfactory, but I would once more emphasise that the question of relapse in the home surroundings is another problem which requires special investigation.

Ninety-seven of the 153 had not relapsed, and 56 reported as follows: 10 relapsed with chorea, 13 with arthritis, 2 with "heart attacks," and in 31 the nature of the relapse was not definitely stated. It is interesting that 46 out of these 56 cases relapsed in the first year after leaving the Home. The cases admitted during these years varied widely: 122 had mitral regurgitation, 76 had mitral stenosis, 30 had disease of the aortic and mitral valves, 8 had aortic regurgitation, 37 were examples of simple dilatation, and 4 of recent pericarditis; 23 were cases of uncomplicated chorea, and 10 of uncomplicated arthritis.

I believe that children with rheumatic heart disease gain by convalescence in an open-air country institution where they can also receive education; if this is correct we are making a step forward in the treatment of heart disease in the early phase of its evolution.

Dr. A. P. Thomson has most kindly given me his latest analysis from the Baskerville Residential School at Birmingham of the first 100 children that passed through the institution. He traced 83, and some of these have been repeatedly examined over a period of four years from the time of leaving; 27, who had signs of permanent cardiac damage on admission to Baskerville, had either improved or held their own; 24, admitted with the diagnosis of carditis, were found later to have normal hearts; 12, who had no signs of carditis at Baskerville, had never developed them; 9 had deteriorated; and 11 had died.

Since these lectures were completed, Dr. Coombs has kindly sent me his latest impression of these results; he also supports my views on the promises of special convalescent treatment. Lastly, I should do a grave injustice if I did not refer with great admiration to the pioneer work of the American Heart Association.

Limitations of Complete Rest.

It is difficult to decide the time for which a child should be kept at complete rest after an attack of rheumatic morbus cordis. Opinions differ because children differ, but my general impression is that the value of complete rest, so valuable in active heart disease, can be overestimated in convalescence. A child's heart gains very little—in fact, I think it loses—by prolonged, aimless rest in bed, and certainly the general tone of the child suffers. Graded exercise acts as a tonic to a child's heart. We have to judge when the stage for its employment is reached by observation of each individual case. We have to look to the general condition of the child. Is he gaining weight, cheerful, and fretting for movement? Has the pulse steadied, the impulse of the heart become firm, the area of cardiac dullness become constant? Has the temperature settled and the active signs of rheumatism disappeared? The heart of a child is not so frail that it will suddenly collapse, even if we do advance one stage a little prematurely, provided we keep a close watch. What happens is that the child becomes tired and pale, and the heart may be quickened when at rest and may possibly even dilate a little, or the temperature rise slightly in the evening. This set-back happens more rarely if we can start with skilful massage of the limbs. If a murmur becomes louder, the heart is probably reacting well. The young heart has remarkable vitality. In my cricketing days one of my friends, a double Blue, a County cricketer, and a brilliant fielder and hard-hitter, had, I discovered later, won all his successes in spite of a combined aortic and mitral lesion dating from acute rheumatism in childhood. I do not advocate this method of treatment, but if such a heart can stand the strain of first-class athletics and in the end only succumb to a malignant endocarditis at middle age, we cannot go far wrong in cautiously replacing complete rest with graded exercise for the many children who are kept moping and unnerved for months because they have had a definite but mild carditis.

For over 20 years I have made attempts to treat rheumatic heart disease by sera and vaccines. Messrs. Burroughs and Wellcome made the first serum for me when Dr. Vernon Shaw was working at the subject, and later I tried various antistreptococcal sera, but I never succeeded in obtaining results which justified any clear statement. My experience of vaccines in malignant endocarditis has been one uniform record of complete failure in both child and adult, used early or late, in combination with sera or separately, autogenous or stock, simple or complex, given by the expert or by myself. Not one case has recovered. If acute rheumatism be streptococcal, I consider that the vaccine I now use, prepared by Dr. D. Nabarro from eight strains of streptococci obtained from ante-mortem and post-mortem cases of rheumatic carditis, is rational. I am using it for subacute cases with persistent mild fever, and believe it to be worth a trial. The dosage is a safe one, and is as follows:—50 millions, 100, 250, 500, 750, 1000, 1500, 2000 millions, twice weekly at first, and once a week when the largest doses are reached. The vaccine is sensitised by Besredka's method.

THE BORDERLANDS OF FEEBLE-MINDEDNESS.*

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It is a characteristic of all social problems that they have no sharply defined frontiers. They are all so intimately related that we cannot view any one problem as an isolated entity, any more than we can picture any nation in a position of "splendid isolation." For instance, the problems of housing and rents cannot be considered without reference to the earning capacity and industrial efficiency of the workers who dwell in them. These questions in turn depend upon the character of the employment, the current rate of wage associated therewith and, above all, upon the mental equipment and physical fitness of the individual worker. But in no social problem is this interdependence more striking than in the great question of mental welfare. In England there has been too great a tendency to study it apart from its cognate problems. This tendency is the natural result of the historical development of our interests and of our attitude to the problem under changing social conditions, which until recently have centred attention too closely upon the educational aspects of feeblemindedness, forgetful of the fact that feeblemindedness is but one facet of the many-sided problem of youth and adolescence. On the Continent

* A paper read at the Conference of the Scottish Association for Mental Welfare at Edinburgh.

there has been less confusion of thought and, I think, a wider grasp of the issues involved, with the result that the subject of mental deficiency has been there regarded more from what one may term the eschatological point of view, by which I mean that which estimates the future character-development of each child and the possibilities of his becoming a satisfactory citizen, adjusted to the demands made upon him by the community in which he lives and capable of that ordered and regulated conduct and self-control which is the essence of citizenship. The child with a psychopathic inheritance, the neuropathic child, the neglected or ill-treated child, and the child who is the victim of mental conflicts which result from maladjustments at home, all form an integral part of this problem. It must ever be kept in mind that the outlook on life engendered by adverse circumstances such as these, and the defects in character which so frequently result therefrom, are at least as important as that reduction in general intellectual capacity which is labelled "feeble-mindedness." In attempting to widen our horizon, however, we meet the initial question: Are we to regard mental deficiency (from idiocy to intellectual retardation) as a unitary condition in which the effect follows a given cause, just as the congeries of symptoms which we call "enteric fever," follows infection by the specific Eberth's bacillus? Is it not more probable that under this general term we are grouping a number of conditions, ætiologically distinct, but manifested by the same general type of mental phenomena and conduct which are the direct outcome of mental processes? An analogy will perhaps explain my meaning. Until comparatively recent years all kinds of infections which were characterised by a continuous rise of temperature were grouped together under the term "continued fever," but with the increased knowledge of causation afforded by bacteriology these are now differentiated into distinct morbid conditions.

Two Categories of Mental Deficiency.

We can, I believe, distinguish two main divisions of mental defect; these may be termed "evolutive" and "devolutive." In the former the evolutionary processes have been retarded, and the individual, and usually also the stock from which he springs, has not reached that level of mental development which is demanded by our educational and social systems. In the latter group some intercurrent factors have come into play tending to the destruction of the stock in which they appear. To these factors, such as failure of, or lack of, balance between the activities of the ductless glands, I have applied the term "phthersigenic."[1] The types belonging to this devolutive category frequently show "stigmata of degeneration," whereas the evolutive types in no way differ in appearance from their normal fellows. In the evolutive group there is a reduction in the specific educational capacities, such as those for the acquisition of arithmetic, or of reading, rather than a reduction in the general intelligence. There is abundant proof that general intelligence is distributed in any community along a "normal curve of frequency" similar to the distribution of height, whereas these specific capacities show a markedly irregular distribution. This difference in the distribution of the two factors which go to form general intellectual capacity is a clear indication of the truth of the "Two Factor" theory of intellectual capacity formulated by De Sanctis and Spearman. In the evolutive group the specific capacities remain "larval," and though in this age of commerce and literary education the individuals who belong to it find themselves handicapped in the struggle to maintain themselves, yet they perform a necessary, though it may be humble, service to the community as "hewers of wood and drawers of water." In fact, the presence of such persons to do the drudgery and menial work in a complex civilisation is one of the safeguards of society as at present constituted.

If we take as our criterion capacity to conform to the standards and inhibitions of the community, the menace to society of individuals who show temperamental or character defects is far greater than that of the so-called feeble-minded. The original meaning of the word "character" was the impress of the die upon the plastic material of a seal or coin. It is of the greatest importance that we should keep in mind this twofold implication of the term—i.e., the innate plasticity or receptivity of the mental make-up and the forces and influences which are brought to bear upon it, by which it is shaped and moulded. Remembering this we realise how misleading is the antithesis "Nature *versus* Nurture," for the implied antagonism cannot exist, nor is it possible to calculate the relative values of each component. Heredity and environment form the warp and woof of the texture of personality.

Exogenous and Endogenous Factors.

The same facts can be expressed in another way. The material or bodily components of the mind of every individual share with the rest of the body the debts which each of us owes to the generations which have preceded us, the physical capabilities and weaknesses which are handed on from parents to offspring according to the so-called "laws of heredity." These are thus fundamentally biological factors and as they are inherent in us they may be termed endogenous. On the other hand, as Aristotle [2] points out again and again, man is by nature a social animal, and from the earliest days of his life suggestions of social import pour in upon him and with a pressure which increases year by year mould him to the pattern demanded by the community of which he is a member. Thus his conduct, which is the expression of his degree of adjustment to his social environment, is the impression of the design which has been cut upon the die. These factors are exogenous. "Character," therefore, implies a degree of permanence and stability of conduct, and the lack of these qualities constitutes in the main what is popularly termed a "weak character." But in the light of recent developments in psychology we are led to regard as the mainspring of conduct not the intellectual qualities of reason and judgment, but the emotions, and have come to associate the manifestations of the emotions with the activities of the endocrine glands. But since the regulation of bodily growth is also a function of these organs, a definite relationship has been established between the bodily and mental functioning. This is the explanation of the frequent presence of "stigmata of degeneration" in individuals belonging to the "devolutive" category.

Continental observers, for example, describe two distinct physical types as associated with markedly anti-social proclivities—i.e., the "Kobold type" amongst boys and the "Steatic type" amongst girls. The latter type is said to be found chiefly amongst prostitutes and women of the most degraded class. With a marked tendency to fatness, a coarse greasy skin and thick tousled hair, is associated an incurable indolence and inability for any form of sustained work. The "Kobold," so called from his fancied resemblance to the gnomes or goblins of our fairy stories and myths, is a short, thick-set muscular individual with a large thick-boned skull balanced by a powerful jaw. (See figure.) Prof. Lazar of the Psychological Clinic attached to the Children's Court in Vienna, told me in conversation that all of the five boy-murderers whom he had examined belonged to this type. The following is a good example of this Kobold type:—

CASE 1.—Boy, born April 4th, 1917, and first examined Oct. 18th, 1926.

Family History.—A bigamous marriage; father imprisoned and on release absconded to Australia. Mother a careful intelligent woman, anxious to do her maternal duties.

[1] Æschylus: Septem contra Thebas, line 1054.
ὦ μεγάλαυχοι καὶ φθερσιγενεῖς
Κῆρες Ερινύες.

[2] Aristotle: Nicomach, Ethics 1, VII. 6, also Politics 1253 a2. See also Seneca, De Beneficiis, vii., i., 8.

School Report.—Was in Board of Guardians' Cottage Homes for several years. For past year has been stealing regularly and frequently, chiefly apples, bottles of sauce, sausages, jam, &c. Headmaster reports, "intelligent boy, above the average of his class." Untruthful and cruel but willing to help in the house-work.

On March 16th, 1928, he was charged with persistent wandering into railway trains. On March 1st he took a small sister at 10 P.M. to the station, where they secreted themselves in a train which he said was labelled "Crewe." On reaching Crewe they got out, seeing another labelled "Glasgow," got into it. Ultimately they found their way to Stockport. Three days later he took his sister by a local train for a 25-mile journey. On March 10th he again found his way to the station at 10 P.M. and, seeing a train to York, got into it, but was found at Burton-on-Trent. He gave the following account of his escapade:—

Child of the Kobold type.

"I played in the street after I had scrubbed the floors, until it got dark, and then went to the station. I got in a train; it was going to York. I wanted to go in a ship on the River Humber. I've seen (pictures of) people going on to the ship. I thought the ship would go down the Humber, round Scotland, and then past Ireland and over the 'Lantic Ocean' to Canada. New York is by North America. I thought I'd see some Red Indians and go with them in a tent; I'd work for them and scrub the floors. There's a lot of fruit. I'd live with the Indians because they're kind. The porter took me to a little office and they gave me some bread and cheese and put me in another train in the guard's van. I looked through the window and saw the fields and a fair and an aerodrome." (This is quite correct.)

He reads with ready facility and with the same tendency to fantasy building. Calculates quickly, and at once gave the correct change from half-a-crown after buying four loaves at 4½*d.* each. Physically he is short, thick-set, with large head and jaws, and no evidence of disease.

Physical and Mental Correlation.

Kretschmer [3] and others have noted that when a mental break-down occurs, the form of insanity which results is largely conditioned by the bodily configuration of the individual; that there is, in fact, a biological affinity between the bodily and the mental make-up. Bearing in mind this biological affinity and also the hereditary transmission of physical or endogenous characters, we are prepared for the discovery of a strong familial association of certain types of mental abnormality, including the various forms of insanity, mental deficiency and those neurasthenic manifestations which are grouped together under the inclusive term "neurotic temperament." This intimate relationship between types of bodily conformation and mental traits and dispositions is of course recognised in our experience of every-day life. Don Quixote, the lean and lanky idealist, is the opposite of Sancho Panza, the jovial exponent of animal spirits. In fact, amongst German writers the "Sancho typus" and the "Quixote typus" are used to designate opposite poles of combination of bodily and mental characteristics. From the social point of view these cases are much more important than pronounced cases of mental defect. From an administrative point of view they form a far more difficult and intricate problem, for they cannot be brought within the ambit either of the Lunacy or of the Mental Deficiency Acts. They belong to the borderlands of feeblemindedness. Yet even the most ardent of eugenists would scarcely at present propose that a mental break-down should entail segregation or sterilisation, and that marriage and parentage should be for ever prohibited. Yet such stocks may supply examples of every kind of anti-social behaviour. In the Minutes of Evidence presented to the Royal Commission on the Care and Control of the Feebleminded [4] is a genealogical tree which gives a vivid illustration of the burden which the community has to bear from stocks which carry this neurotic temperament. Here is another example:—

Some years ago, in the course of examining a boy of 11 who had been absent from school for two years with severe chorea, I was struck by the mental inertness of his mother. She was a highly neurotic, garrulous woman, who complained that "her nerves had affected her memory." She had received a better education than might have been expected from her social status. Two of her sisters had been insane. Two of her children had died in infancy; her other older son was normal but suffered from chronic ear-disease. Her two remaining daughters, aged 18 and 16, already showed marked mental instability. Her late husband, who was said to go "violent mad when drunk," had attacked her with a razor, and the question of his certification as a lunatic had been raised before his death from typhoid at the age of 48. He was the father of an illegitimate child. Of her husband's family one sister was insane before marriage, had had an illegitimate child, and was very violent-tempered. The first husband of this sister had been hanged for murder, and her second husband, whom she had attacked with an axe, had left her owing to her violence. Her daughter from her first husband had been certified insane. Another sister was a chronic alcoholic with one illegitimate child. A brother was described as "most violent," who "threw the crockery about." Another brother was described as "highly strung, most irritable."

This family history affords a good example of the various manifestations of mental instability and of the social havoc which degenerate stock may wreak in a community. It is indeed probable that the severe chorea in my patient was but part and parcel of the same genetic instability.

CASE 2.—A girl, aged 9, was examined on March 3rd, 1928.

Family History.—The father, who was discharged from the army as mentally unfit, states that while serving in North Russia "they reckoned I went mad in the firing line. I went properly mad. I jumped over the barbed wire and started firing, I don't remember much about it." He was placed in an asylum, and later had a second attack and was again in the asylum for four months. Is a quiet-mannered, debilitated man who earns his living by cutting firewood.

Present Condition.—A bright and engaging little girl who for the past two months has been a persistent thief from home and school, but her parents had noticed a tendency to pilfer for some time. She spends part of the money on herself and gives part of it away to other children. She shows a marked deftness and method in her pilfering, and no idea of remorse in robbing her father of the money he had saved to buy his wood. "I took 10*s.* from upstairs—mother was keeping it for my coat." "The teacher's bag was hanging on the pipes, I took 18*s.* I went with another girl to Woolworth's. We bought some sweets, a powder-puff and face cream, and some fancy garters. I've some long stockings at home. We went on the bus. We went to the coffee house and bought a boiled egg and bread-and-butter. We often go to the pictures. Dad gives us the money."

The girl showed no evidence of physical or mental defect except much fidgetiness, and was quite up to the average intelligence and education for her age.

CASE 3.—Boy, born on Sept. 27, 1910. Left school from Standard VII.

Headmaster's Report.—"Mental capacity fairly good, takes an interest in games; of fairly even temperament. Possesses considerable capability."

At the age of 10 he was sent to an Industrial School, having been charged with stealing £15 and a bicycle pump. While in the school his general conduct was good and no signs of

[3] Kretschmer: Korperbau und Charakter, Berlin, 1921.

[4] Royal Commission, vol. i., pp. 611, 612.

mental abnormality were noticed. On being licensed out to a farm, in 1926, he set fire to the stacks of his employer. He states that he had been happy and well-treated at the farm. "I went to the pictures. I saw a ship on fire, and when I was coming across the field I was thinking of lighting a fire. When I came back I went to the farm and lit six or seven hayricks. I went to bed and got a drink of water. I was frightened because I knew I should get into trouble. I've never done it before. The idea came to me when I was coming across the fields and I felt I'd like to do it. I thought they'd blame someone else. I didn't want to damage the master. I weren't thinking when I was lighting it. I was sorry afterwards."

Mental Examination.—Memory span of six figures. Understood the use and object of postage stanps. Calculated the change from 2*s.* 6*d.*, on buying four loaves at 4½d. each, quickly, and gave the number of halfpence in 7*s.* 6*d.* For three-word combination sentence gave "London's like a money (many) flowing river." Failed in detection of a fallacy, gave fair list of differences between wood and glass. Did Healy's Form Board B correctly. No physical disease.

Family History.—Mother has been in a lunatic asylum on three different occasions, is now at home, but is reported to be again in need of certification. Though the examination showed that he could not be certified under the Mental Deficiency Act, it is of course quite possible to argue that his actions are the preliminary signs of mental degeneration, though his subsequent history gives no indication at present of any such degeneration. He is now in regular employment.

It is clear from the family antecedents of these illustrative cases that when they reach adult life they are likely to constitute a menace to the well-being of the community unless the force of social suggestion acts with sufficient power to mould the character with the impress of social obligation. But the problem which presents the most acute difficulty is that of dealing with the numerous children who, as the result of an attack of encephalitis lethargica, show the strange perversions of character which manifest themselves in anti-social conduct. These children become addicted to persistent thieving, lying, and sex-delinquencies and are the bane of the home in which they live. Not a few of them find themselves in the Children's Courts, and some are convicted to industrial schools, reformatories, and prisons. Yet few show a deterioration of intellectual capacity sufficient to bring them within the Elementary Education (Defective and Epileptic Children) Acts or the Mental Deficiency Acts, and the majority remain free to pursue their own course of wayward and unruly conduct. The few who are to be seen in mental hospitals differ in no way from the rest of their fellow sufferers.

Austrian Methods.

But how is this impress of social obligation to be made if we narrow the scope of our efforts by the limitations imposed by the Mental Deficiency and Lunacy Acts? Herein I think we may learn much from the methods in Austria, where the problem is viewed from a wider standpoint without the departmentalisation which has grown up in England. There the basis of classification is in the main a psychological examination. There may be a tendency to rely too completely upon conformity to certain preconceived psychological types, but I think there is no doubt that such an examination and classification yields more valuable results, from the point of view of the capacity for future citizenship, than those which accrue from a determination of the mental age and intelligence quotient, useful as these may be. For example, at the Great Colony of Egginburg, some 50 miles from Vienna, there are about 900 male and female inmates of ages ranging from 6 to 25 who, on the results of a careful psychological examination, are housed in pavilions containing 25 beds under a supervisor. The inmates of the male section meet in common in the workshops, extensive gardens, farms and orchards and, where possible, boys from the country districts are employed in occupations which are likely to interest them and to be of value to them in after-life—e.g., gardening, farming, fruit-growing, carpentering—while the town-dwellers are taught the more mechanical trades which will serve them in good stead when they return to their homes in the towns—e.g., tailoring, weaving, shoemaking, baking, building, &c. This division, according to their individual interests, in itself tends to reduce mental conflict and to arouse an increased interest and contentment.

The groups into which the inmates are divided are: (1) Those suffering from simple neglect without character defects. (2) Those who have suffered from neglect or ill-treatment and exhibit true character defects and conflicts at home, showing a tendency to gang-formation. (3) Those who show slight neuropathic tendencies. (4) Those who show severe neuropathic conditions, but with good intelligence—the "difficult child" type. (5) Those who suffer from psychopathic defects, but without instability of character; mental conflicts. (6) The aggressive or Apache type, often with reduced general intelligence. (7) Those with severe psychopathic defects, epilepsy, early dementia præcox cases. (8) The feeble-minded.

It is only when one sees a mass parade of all the inmates divided into groups that one realises the practical validity of this method of classification.

A very similar classification system is carried out at other institutions which I have visited in Vienna as for example at the Schutzheim for difficult boys managed by Dr. Kehrein under the auspices of the *Sodalitas Salesiana.*

It must not, however, be inferred that no psychological classification is used in England, but the point upon which I wish to lay emphasis is that here each group would be treated, if at all, in a separate institution and generally under separate authorities, both central and local—e.g., the local Education Authority under the Board of Education; the Poor Law Guardians under the Ministry of Health; Industrial and Reformitory Schools under the Home Office; the Mental Deficiency Committee under the Board of Control; and voluntary organisations. Yet each group represents one aspect of the great protean problem of childhood and adolescence and most of them belong to the borderlands of feeblemindedness, each being symptomatic of a difficulty in adjustment to the environment and the realities of life. We cannot too often remind ourselves of the saying of the Roman philosopher, Seneca,[5] *non scholæ sed vitæ discimus*: for the purpose of our educational efforts is not the mere inculcation of knowledge, but to aid each individual to play his part, however humble that part may be, in the community of which he is a member; to give, in fact, in the words of Plato,[6] "that education in virtue from youth upwards, which makes a man eagerly pursue the ideal perfection of citizenship and teaches him how rightly to rule and how to obey."

Upon the standpoint from which we survey the problem will depend not only the scope of our endeavours but the means which we shall employ. The wider our view the better able shall we be to envisage the problem of mental maladjustments as a whole, unfettered by any artificial sub-division of the individuals whom we hope to benefit by our efforts, and the greater will be the advantage to the community which we serve.

[5] Seneca: Epist. 106, §12. [6] Plato: Laws, i., 643.

LOTTERIES FOR BOMBAY HOSPITALS.—It was recently proposed to the Corporation of Bombay that money for the maintenance of the local hospitals should be raised by means of lotteries. The plea was supported by the argument that the public of Bombay are already supporting hospitals and charitable institutions in Goa through the Goa lotteries, of which there is one every fortnight, and it was calculated that from 20 to 25 lakhs of rupees could be raised in this way. The Medical Relief Committee of the Corporation referred the matter to the Municipal Commissioner, who pointed out that such lotteries would require the sanction of the Presidency Government, which was very unlikely to be given to an organised series. The proposal has therefore not been entertained.

BLOOD TRANSFUSION IN BLACKWATER FEVER.

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THERE is no disease in which the prognosis is so ncertain as blackwater fever, whether treated in the ropics or in England. From time to time practitioners et a series of favourable cases and are then apt to onclude that the success is due, say, to the adminiration of some special drug. A subsequent unavourable series, however, causes them to doubt, and arns them not to boast about their previous results. n experience of 28 years, both abroad and at home, ads me to the conclusion that, apart from careful ursing and attention, there is no specific treatment or this disease. Many drugs have been lauded from me to time, only to fall into disfavour and disuse. The main causes of death in blackwater fever are) syncope, (2) acute hæmolysis, (3) suppression of rine, (4) hyperpyrexia, and (5) asthenia, which roduces, perhaps, the most disappointing results. n this type of case the urine clears, yet the patient oes not improve, the blood does not regenerate, and radually a semi-comatose condition supervenes and eath takes place. Looking back, one is impressed y our powerlessness to prevent death in such cases. he marrow seems to become exhausted, and no nger capable of producing new blood.

In a recent case of this kind we tried to save life y blood transfusion, and so had the opportunity seeing its effect in stimulating the marrow to newed life and the formation of fresh blood corscles. We had no hesitation about trying this, en considering the possibility of causing more emolysis, because the patient could not have lived rough the night.

In a paper on blackwater fever in London,[1] Mansonahr and Sayers record a somewhat similar case. ney say:—

"In a recent moribund case in whom the urine had eared, but who was suffering from extreme anæmia (the ood count showing only 850,000 red cells per c.mm.), blood nsfusion of 700 c.cm. of blood was performed, with the sult that the patient revived in a miraculous manner and gained consciousness. There was no evidence of any ther hæmolysis, and the urine remained clear. Unfornately the improvement was not maintained and, in spite a further transfusion, the patient died three days later."

In this case the authors considered the results couraging and thought it was worthy of another al if a suitable case occurred.

The Present Case Described.

The history of our case is as follows:—

European, male, aged 50, a planter in British Guiana. rn in England; went to British Guiana about 1896 and s lived there ever since with the exception of holidays England, the last of which was four years ago.

Previous Illnesses.—Measles; no scarlatina, enteric, or umatic fever. Many attacks of malaria during the last years; one attack of dysentery. Had an attack of hæmaturia five years ago (1923), and was in hospital six eks. No definite diagnosis was made. Came to England er this attack and saw a specialist, who could find no cause the hæmaturia. X ray examinations were negative.

Present Illness.—In January, 1928, the patient suffered from a series of short attacks (about four in number) of what was called hæmaturia. He did not go to bed, but went on with his work the whole time. The attacks lasted three or four days to a week, with three to ten days' intervals. Patient then sailed for England and at first felt fit and well, but a little later he felt feverish once or twice. On Friday morning, March 23rd, he got a chill while on deck and developed a sharp fever. He passed dark-coloured urine that afternoon, and his temperature was 103° F. that night. The ship arrived at Tilbury on March 26th, 1928, and the patient was immediately brought up to the Hospital for Tropical Diseases and admitted at 1 P.M. A cursory examination at once showed that he was suffering from hæmoglobinuria (blackwater) and not hæmaturia. He was desperately ill, deeply jaundiced, anæmic, with a large spleen and a subnormal temperature, 96·6° F. The pulse was fair. The lungs showed considerable bronchitis, with râles and rhonchi over both bases. A blood count showed the number of red blood corpuscles to be as low as 980,000 per c.mm.; white blood cells, 7000; hæmoglobin, 30 per cent.; differential count: polymorphonuclear leucocytes, 67 per cent.; large mononuclear leucocytes, 7 per cent.; lymphocytes, 26 per cent.; eosinophils, 0. No parasites. Anisocytosis and poikilocytosis, marked. Urine: dark reddish black colour; albumin, ++; many granular casts and debris; no red blood corpuscles; hæmoglobin present.

Treatment was at once commenced with rest, warmth, fluids, nourishment, and alkalies. The foot of the bed was raised; milk diluted with soda water, orange water with glucose, barley-water, and sodium bicarbonate in water were given repeatedly in small amounts by the mouth.

At 11 P.M. on the night of admission, considering the journey from the dock to the hospital, the patient's condition was fair. Since admission at 1 P.M. over 20 oz. of black urine had been passed, which showed evidence of clearing in the later samples. Fluids were being taken well; the pulse was 112, and its volume fair.

At 6.30 A.M. next morning the patient showed signs of collapse. The pulse became almost imperceptible at the wrist, and the breathing irregular and of the Cheyne-Stokes type. The mouth and tongue were very dry and sore. Strychnine gr. 1/30 subcutaneously was followed by intravenous glucose ℥ viii. at 8 A.M. By 10 A.M. a rapid change for the worse set in, with sweating, pain in the chest, rapid and feeble pulse, and respiration-rate 42. The features became pinched, the eyes dull, and a mucus rattle appeared with respiration, the patient being too weak to cough. Strychnine gr. 1/30 was again given, followed by camphor in oil 1 c.cm. an hour later. Some delay (through no fault of the London Blood Transfusion Service, who in this case, as in all previous cases, have never failed to provide volunteer donors to this hospital at short notice) arose in arranging for a blood donor, and during the interval before his arrival the temporary improvement, which had again followed the stimulants given at 3 P.M., passed off. By 6 P.M. signs of rapid dissolution were present: a semi-conscious state, glazing of the eyes, rattle in the throat, and very feeble pulse. We were unanimous that without blood transfusion death was imminent.

The patient's blood had previously been examined and found as follows: red cells, 980,000 per c.mm.; hæmoglobin, 30 per cent.; white cells, 7000; blood-group III.; van den Bergh: direct test negative; indirect test strongly positive—about 22 units. Test for hæmolytic system, as found in cases of paroxysmal hæmoglobinuria, negative. At 7 P.M., after checking the absence of agglutination of the donor's cells by the patient's serum, blood transfusion was started and 400 c.cm. of citrated whole blood was given. During the transfusion a visible improvement took place; the pulse became stronger, the colour less ashy, the tongue less dry, and at the close of the transfusion the patient succeeded in coughing up mucus from his throat. The urine subsequently passed showed no evidence of any further hæmolysis; 44 oz. of black water had been passed in the first 16 hours in hospital, and contained much albumin and some granular casts. Red blood cells were not seen, but hæmoglobin was present. At 10.45 P.M. strychnine was again used to treat a sudden collapse; the very brief improvement was followed at 11.20 P.M. by another period of collapse. Shortly afterwards the bowels moved in response to an oil enema; there was a very distinct improvement, the pulse being better and stronger. As the bowels had been confined for some time and, as was discovered later, hæmorrhoids caused much pain on defæcation, it is probable that the collapse was associated with the bowel movement.

March 28th: The patient had slept for short periods during the night. He maintained the improvement during the day, but had slight incontinence of fæces and urine with pain on micturition. His general condition remained much the same until the afternoon of the 29th, when he became distressed and appeared to have considerable pain over the ron. f the right chest, where pleuritic friction was audible.

[1] P. Manson-Bahr and E. G. Sayers: THE LANCET, 1927, i. 773.

The application of antiphlogistine gave relief and the condition appeared to resolve. The urine collected for the two periods of 24 hours was 61 oz. and 47 oz. The blood count showed 1,000,000 red cells and hæmoglobin 30 per cent.

30th: In the morning the breathing became laboured, the pulse quickened, and the patient appeared more drowsy and weaker. He was coughing up large quantities of sputum. As he was obviously sinking, it was decided to transfuse blood again, and at noon 300 c.cm. of citrated whole blood were given. There was an immediate general improvement, which was maintained throughout the afternoon and evening.

31st: Patient had slept a little during the night, in spite of a distressing cough, and was stronger and mentally brighter by the morning. A blood film showed normoblasts for the first time. A blood count on April 1st showed 1,630,000 red cells and still no parasites, and another, next day, showed 2,200,000 red cells.

From April 1st onwards the history was one of slow but steady progress. The amount of urine passed daily varied from 60 to 80 oz., the temperature, which had been swinging between 99·5° F. to 101° F., began to subside, and the cough became less troublesome. Liquor arsenicalis ℥i. t.d.s. was started on April 2nd, and was gradually increased. On the 9th "ring" forms of the parasite of subtertian malaria (*Plasmodium falciparum*) were found for the first time. Quinine hydrochloride gr. i. with iron and arsenic was therefore given three times. On April 10th, tablet plasmochin co., one twice a day, was started, and the iron and arsenic were discontinued. The plasmochin tablets were gradually increased.

Date.	R.B.C. in millions.	Per cent. of Hb.	Treatment.
March 26	Jaundice developing.		Rest; fluids; diluted milk; alkali; glucose
27	9800	30	As above + strychnine gr. 1/30 bis.; camphor in oil once; blood transfusion 400 c.cm.
28	1000	30	As above, without blood transfusion.
29	—	—	As above, with blood transfusion 300 c.cm. + meat extract + jelly + sago.
30	1000	30	Normoblasts seen.
April 1	1600	—	
	Jaundice abating.		
2	2210	40	Liq. arsenicalis ℥i. t.d.s.
5	2800	40	
9	—	—	*P. falciparum* "ring" forms seen. Quinine gr. i. + iron and arsenic t.d.s.
10	—	—	Full diet + liver. Tab. plasmochin co.—2 daily.
12	3230	70	4 ,,
13	—	—	8 ,,
14	Temperature normal.*		9 ,,
15	—	—	12 ,,
16	—	—	12 ,,
17	—	—	Tab. plasmochin co. discontinued.
18	3700	70	No malarial parasites seen on this date nor in any subsequent examination.
22–25	—	—	Plasmochin co. 12 tab. daily.
26	3900	75	,, discontinued.
27	—	—	Mist. arsenic co. ℥i. t.d.s.
28	—	—	Patient allowed out of bed for first time for half an hour.
May 4–7	—	—	Plasmochin co. 12 tab.
4	4250	80	—
9	—	—	Out for first drive.
10	—	—	Plasmochin co. 3 tab. daily. Tab. iron and arsenic started.
14	4490	80	—
15	—	—	Patient discharged from hospital, with instructions to continue taking quinine hydrochlor. grs. v. twice daily for the next three months.

* From this date onwards.

The maximum dose of plasmochin co. given was 12 tablets per diem; this dosage was reached gradually from an initial dosage of two tablets per diem. The plasmochin was given in short courses of decreasing length—viz., six, four, and four days—and the intervals of rest from plasmochin co. between each course increased—viz., five–eight days in this case.

Blood transfusion is not an entirely new line of treatment in blackwater fever, for Manson-Bahr and Sayers[1] record a case. Nevertheless, the results in our case, considered with the scanty records of other people's work on this line, appear to justify this somewhat lengthy account of our single case.

The clinical condition, combined with the laboratory tests of our patient on his admission on the fourth day of his illness, suggest that as a case he would come into Group II. as described by G. R. Ross. Group II. cases are described as those showing "definite hæmoglobinuria of moderate severity; no suppression; recovery." These cases show Fouchet's test for bile pigments in blood + +. van den Bergh's direct—negative; indirect—5 and 16 units. If placed in this group our patient must have been in the severest attack compatible with inclusion in the group, and were it not for the fact that he was alive almost untreated, 70 hours from the onset of blackwater, it might be justifiable to place his case in Group III.: "Cases with severe hæmoglobinuria, no suppression; death in 24 to 48 hours." These cases showed Fouchet's test + +: van den Bergh's direct—negative; indirect—6 (first day) to 20 units.

W. Kikuth[3] gives a comprehensive summary of the therapy recorded by various authors in blackwater fever, but no reference to blood transfusion appears.

Actual and Theoretical Effects of Blood Transfusion in Blackwater Fever.

1. It undoubtedly treats anoxæmia symptomatically by helping to replenish the patient's supply of red blood cells.

2. It acts as a stimulus to blood cell formation. There may or may not be an adequate stimulus already provided, but in our case the rise in the number of red cells per cubic millimetre coincided with the time at which blood rejuvenation occurs in other diseases after blood transfusion.

3. The urine in blackwater fever is loaded with albumin. The introduction of healthy blood plasma is probably advantageous.

4. It dilutes the hæmoglobin and the bile pigments already free in the plasma, and so may aid the kidneys in its work of excretion.

5. It replenishes blood-volume without unduly increasing the amount of sodium chloride. Baker and Dodds[4] have shown in their work on obstruction of renal tubules during the excretion of hæmoglobin that a percentage of more than about 1 of sodium chloride is a very important factor in causing coagulation of hæmoglobin, and therefore tends to cause suppression of urine. Further, Dr. J. G. Thomson in conversation with one of us (P. H. M.), has recounted how disappointing and sometimes even disastrous were his results in treating blackwater fever in S. Rhodesia with intravenous salines. This was, of course, before the publication of the work of Baker and Dodds in 1925.[4]

6. It provides the most natural antidote possible to the acidosis and the acid urine which Baker and Dodds have shown in the same paper to be so very important in causing coagulation of the liberated hæmoglobin.

It is noteworthy that in our case, in spite of the alkali treatment which was carried out from the start of hospital treatment, the urine was still acid to litmus on the second day—after nearly 24 hours' treatment.

7. It provides such antibodies as the donor may have in his blood against organisms which are likely to cause intercurrent infection—e.g., lung complications.

8. It does not appear to lead to further hæmolysis provided the bloods are carefully matched. Auto-agglutination has been observed by us in several malarial infections, and demands the utmost care to keep the temperature of the ingoing blood and of the receiving limb as near normal as possible.

9. Whether there is any specific therapeutic action against *P. falciparum* is very doubtful.

It should be noted that neither our patient nor the donor had any quinine in his system at the time of the transfusion. M. Ghiron, in his studies on the pathogenesis of blackwater fever[5] has demonstrated i

[1] Ross, G. R.: Brit. Jour. Exp. Path., 1927, viii., 442.
[3] Kikuth, W.: Arch. f. Schiff- und Tropen-Hygiene, 1927, 501.
[4] S. L. Baker and E. C. Dodds: Brit. Jour. Exper. Path., 192 vi., 247.
[5] Arch. f. Schiffs- und Tropen-Hyg., 1927, xxxi., 113.

itro the marked hæmolytic action of blackwater ever serum on quininised red cells, particularly on hose from a malarial patient. Transfusion of blood ould therefore appear to be inadvisable at a time hen the blood of either donor or recipient contains uinine. Prof. Ghiron's charts suggest that the æmolytic system disappears from the serum of a lackwater fever patient within a month of the ttack.

Conclusions.

In view of the facts brought out by this case, it ould seem that transfusion of whole blood at the me of, or immediately after, an attack of blackwater ever, provides us with a new and useful therapeutic easure in the treatment of certain types of this isease, the usual methods of rest, warmth, fluids, and lkalis of course being combined.

Further, our case suggests that the fear of causing ore hæmolysis should never be allowed to prevent lood transfusion in desperate cases of blackwater ver, and that even in less severe cases transfusion ay be a useful addition to treatment. We feel sure at transfusion should not be delayed until a patient moribund, but that even at the last minute it is orthy of trial. The exhibition of tablet plasmochin . several days after the initial hæmoglobinuria caused o further hæmolysis and it was successfully exhibited gainst the parasites of *P. falciparum* when they appeared in the peripheral blood.

OME ASPECTS OF VESICAL TUMOURS

AND THE RESULTS OF TREATMENT.

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This investigation began in an endeavour to scertain the best form of treatment for papilloma of ie bladder, more especially to prevent recurrences, ut it soon became evident that other vesical eoplasms would have to be included. The neoplasms which the bladder is susceptible are classified into mple and malignant, the latter being either locally generally malignant, according to whether they vade the bladder alone or form metastases in other arts of the body. The most important simple mour is the papilloma, which may be sessile or edunculated, varies in size from a small pea to an range, and possesses long villous processes. Other mple tumours, such as the connective tissue tumours hich arise in childhood, adenomata arising in glands the base, and cholesteatomata, are exceedingly ncommon and none occurred in this series.

The malignant growths which attack the bladder e the malignant papilloma, the carcinoma, and the rcoma. In the malignant papilloma the villi are ore stunted and irregular than in the benign form, ie bladder wall becomes infiltrated, and the mucous embrane at the base of the tumour adheres to the bmucous tissue. Carcinoma of the bladder may e a sessile nodular growth, irregular in appearance, rojecting into the lumen of the bladder, and varying size from a marble to an orange, or it may be ainly intramural with a few nodules of the surface. rcoma is extremely rare and is found only in infancy d late adult life. Only epithelial neoplasms occurred this series.

The difficulty in diagnosing, in certain cases, etween carcinoma and the more malignant forms of apilloma has made it necessary to include all cases vesical new growth in this investigation. For stance, in some of the cases examined the clinical dings at operation have been those of carcinoma, t on section no pathological evidence of invasion s been found. One of the chief reasons for this is at, in the specimen removed for pathological amination, the base of the tumour has not been cut. On the other hand, tumours which to the naked eye appear to be innocent papillomata have, on pathological investigation, shown evidence of invasion. One of the chief methods of treatment of vesical new growth is diathermic cauterisation, the destruction of the growth being performed through an operating cystoscope. Specimens from these cases are not suitable for pathological investigation, so that the diagnosis rests mainly on the cystoscopic appearances. It would therefore not be justifiable to distinguish definitely between simple and malignant tumours on clinical appearances alone.

Incidence and Course.

Vesical neoplasm is a fairly common and fatal disease. Of 168 cases taken from the records of St. Thomas's Hospital between the years 1914 and 1926 only 59 were known to be alive in the latter year; 57 had died and the remainder were untraced.

The disease is most common between the ages of 50 and 65, but two patients in this series were aged 18, one being male and one female. It is more common in males than females, in the proportion of 3 to 1. The tables show the sex- and age-incidence (Table I.).

TABLE I.

Age.	Males.	Females.	Total.	Percentage.
Below 20	1	1	2	1·19
20–29	6	1	7	4·17
30–39	9	3	12	7·14
40–49	21	8	29	17·26
50–59	40	12	52	30·95
60–69	37	12	49	29·17
70–80	12	5	17	10·12
Totals	126	42	168	100·00

Of these 168 cases, only 116 could be traced up to 1926 or till death; 11 additional cases were traced for a time and then lost sight of. Up to the end of 1922, 68 cases were treated for vesical new growth. Of these, 59 were traced from the date of their first treatment until 1926 or until death. These cases, therefore, have a minimum possible post-operative lifetime of at least four years, and (as one first received treatment in 1911) a maximum up to 15 years, according to the date on which they first received treatment. The period since 1922 is too short to give a fair idea of the comparative fatality of the disease in cases treated after that year. The following table shows the number of cases treated up to the end of 1922 and the duration of life after the first treatment.

TABLE II.

Duration of life after operation.	1926.		Total.	Duration of life after operation.	1926.		Total.
	D.	L.			D.	L.	
3–6 m. ..	10	—	10	7–8 yrs. ..	3	3	6
6–12 „ ..	1	—	1	8–9 „ ..	1	6	7
1–2 yrs. ..	3	—	3	9–10 „ ..	1	2	3
2–3 „ ..	2	—	2	10–11 „ ..	—	1	1
3–4 „ ..	2	—	2	11–12 „ ..	1	—	1
4–5 „ ..	2	10	12	Over 12 yrs.	—	1	1
5–6 „ ..	2	5	7				
6–7 „ ..	2	1	3	Total ..	30	29	59

D = dead. L = Living. m = months; yrs. = years.

Only about half of these patients, therefore, are still alive, and of the 30 who are dead 20, or 66 per cent., lived less than five years after operation. A large proportion of deaths occur within six months of treatment. The fatality of this disease is just as strikingly shown in 43 traced patients who received treatment between 1922 and 1926. Only 27 of these 43, or 63 per cent., have managed to live four years and many have lived very much less, as some only received treatment in 1925. It must be borne in mind that many of these patients have had several treatments, and of those who were still alive in 1926 many still had symptoms. The two main causes of death from vesical tumours are hæmorrhage and

pyelonephritis. Post-mortem reports were only found of 12 of the cases which died in hospital. The causes of death in these were :—

Hæmorrhage and cystitis	3
Pyelonephritis and cystitis	4
Uræmia	1
Bronchitis and œdema of lungs	1
Extra-peritoneal abscess	1
Secondary growths in viscera	2

A noteworthy feature of vesical new growths, more especially papillomata, is their tendency to local recurrence after complete removal. They may recur in the actual spot from which the original tumour was removed, or elsewhere in the bladder.

There is some evidence, though it is not conclusive, that innocent tumours do at times become malignant, as the following cases show :—

(1) Male, aged 36, a porter, was operated on on Oct. 21st, 1918, a suprapubic excision of a tumour being performed. The growth had all the naked-eye appearances of a villous papilloma, but unfortunately it was not examined microscopically. Four years later, on Dec. 14th, 1922, suprapubic excision was performed again, and the tumour, on pathological examination, was found to be a carcinoma.

(2) Male, aged 44, on whom a suprapubic excision of a bladder neoplasm was performed on Oct. 15th, 1919. The tumour was reported to be a papilloma by the pathological department. He died six years later in Southwark Infirmary on Dec. 27th, 1925, " after many operations," his death being certified as due to " epithelioma of bladder."

(3) A charwoman underwent on Nov. 8th, 1911, a suprapubic excision of a papilloma of the bladder. The diagnosis was confirmed microscopically. She was readmitted ten years later and at cystoscopy another tumour was seen. This was removed by the suprapubic route on Feb. 9th, 1921. The pathological report was " papilloma ; there are also foci present at the base which must be regarded as an early carcinomatous change." She died a year later.

That even pathological examination as a means of diagnosis was not always to be depended on, the following cases show :—

(4) A governess, aged 64, was admitted to hospital in May, 1917. At cystoscopy a tumour was seen. A suprapubic cystotomy was performed on May 30th, 1917, and a growth the size of an orange was removed, together with a portion of the bladder wall which was adherent to the bowel. The left ureter was involved. One and a quarter inches of the latter were excised and the remaining portion was transplanted into another part of the bladder wall. The pathological report on the tumour was " carcinoma." Four years later the patient was again admitted to hospital with symptoms, and suprapubic excision of a tumour was performed. The pathological report on this tumour was " papilloma." The patient was still alive in 1926, nine years after the alleged carcinoma had been removed, and was free from all symptoms.

(5) A labourer, aged 60, was admitted to hospital in May, 1918. At cystoscopy a growth was seen. This was excised suprapubically on May 16th, 1918, the pathological report being " carcinoma." Three years later the patient was again admitted with a recurrence, which was excised, and also reported on as a carcinoma. He attended in January, 1926, and was then in excellent health and free from all bladder symptoms, eight years after his first operation.

In the last two cases the length of time which had elapsed since the first diagnosis and treatment of the tumour, and in which the patients had been free from symptoms, might almost be regarded as evidence against the previous diagnosis of carcinoma. In fact, as pointed out by Raymond Johnson and T. W. P. Lawrence,[1] " it is extremely difficult, if not impossible, to determine whether a papillary tumour of the urinary tract is entirely benign."

Methods of Treatment.

The age and constitution of the patient, the type of tumour, its position and size, and the amount of involvement of the surrounding structures, all have their influence on the line of treatment. Successful treatment depends primarily on early diagnosis, and the use of the cystoscope for this purpose is of enormous advantage. With the modern instrument very little experience is required. Before its introduction the diagnosis was made from the patient's symptoms, by rectal examination, and by the use of a sound.

[1] A System of Surgery. Edited by C. C. Choyce, i., 483.

The methods of treatment employed on the above-mentioned 168 cases were either radical or palliative. The radical treatments were as follows :—

(*a*) *Defulgurisation*, or cauterisation of the tumour by means of a bi-polar high-frequency current, applied by a pointed flexible electrode through a cystoscope such as is used for catheterising the ureters. The other electrode consists of a flat piece of metal which is held in close contact with the patient's thigh by a bandage. The bladder is previously distended with warm normal saline solution. The part of the tumour in contact with the pointed electrode shrivels up when the current is passed, and the whole tumour is destroyed by moving the electrode. Several applications at intervals of a week or ten days may be necessary.

This method is suitable for small tumours or small recurrences. It does away with the necessity for opening the bladder and is very useful in destroying small seedlings. It cannot, however, be used when there is much hæmorrhage. This method was used alone, or previous or subsequent to other methods of treatment, in 50 cases.

(*b*) *Excision of the tumour* through a suprapubic opening into the bladder may be performed with an electric or thermal cautery, curette, or knife, according to the consistency of the tumour and its liability to hæmorrhage. The diathermic cautery prevents hæmorrhage and is said to prevent the dissemination of seedlings. (Only one case showed dissemination of growth in the scar of the abdominal wall.) Suprapubic excision was used in 85 cases, either alone or previous or subsequent to other operations.

Twenty cases were treated by both the above methods, at different times.

(*c*) *Partial cystectomy* entails removing the tumour together with the surrounding bladder wall and involved structures. The ureters may have to be transplanted into another portion of the bladder or into the colon or skin, or a urinary fistula may be established. This operation was performed five times in the series. Complete cystectomy was never done.

No other forms of radical treatment were employed.

Palliative treatment resolved itself into operative and non-operative. The operative treatment consisted in suprapubic cystotomy, with drainage or the insertion of radium into the growth. This was done in 32 cases. Non-operative treatment, consisting of bladder lavage and deep X ray therapy, was the only thing possible in 20 cases.

Recurrence and After-history.

No matter what form of treatment was adopted recurrences were frequent. Of the 59 patients known to be alive in 1926, 34 only have had no recurrences. Six of these were treated less than two years before the end of 1926, leaving 28 who have been two years or more without recurrence. Table III. shows the number of years they have been free from symptoms and the particulars of their treatment.

TABLE III.

Years free from symptoms.	Suprapubic excision.	Defulgurisation.	Partial cystectomy.	Total.	Years free from symptoms.	Suprapubic excision.	Defulgurisation.	Partial cystectomy.	Total.
2	4	3	—	7	8	1	1	—	2
3	2	1	—	3	9	1	1	—	2
4	4	—	2	6	10	—	—	—	—
5	3	1	—	4	11	—	—	—	—
6	2	—	—	2	12	1	—	1	2
7	—	—	—	—	Totals ..	18	7	3	28

The number of cases among the whole 116 of the series who were traced, in which one or more recurrences took place, was 48. Table IV. shows the number of recurrences and details of their treatments. In addition to the cases tabulated one patient had an uncertain number of recurrences.

To summarise: Of the 116 patients who were traced to 1926 or to a fatal termination, 59, or 50·9 per cent., were still alive in 1926; 34, or 29·3 per cent., of them had had only one treatment and had no recurrences. As shown in Table IV., 48 of the 116, or 41·4 per cent., have had one or more recur-

TABLE IV.

No. of recurrences.	Suprapubic excision only.	Defulgurisation only.	Combination*	Partial cystectomy.	Total.	No. of recurrences.	Suprapubic excision only.	Defulgurisation only.	Combination*	Partial cystectomy.	Total.
nce..	9	6	5	1	21	6 times	—	—	—	—	—
wice	4	3	3	1	11	7 „	—	—	1	—	1
times	—	—	4	—	4	8 „	—	—	—	—	—
„	—	—	6	—	6	9 „	—	—	1	—	1
„	—	—	3	—	3						
						Totals	13	9	23	2	47

* Combination of defulgurisation and suprapubic excision at fferent times.

ences. The remaining patients died after a single eatment, either radical or palliative. Treatment in, therefore, only be said to have been absolutely uccessful in 29·3 per cent. From Table II. it will e seen that the average duration of life after operation 5·5 years. The total number of patients who had uprapubic excision only was 31 and those who had efulgurisation only 16. The percentage of absolutely uccessful treatments by suprapubic excision alone as 58·4 per cent., and by defulgurisation alone 3·75 per cent.

These figures are so small that very little value an be attached to them, and they give no indication the type of tumour treated. Nevertheless, they em to point to the fact that, in the large majority cases, suprapubic excision gives the better results. f the two patients in whom the disease occurred the early age of 18, the male underwent a suprapubic cision in 1921 and has been free from symptoms since en. Defulgurisation on the female in 1922 was llowed by two recurrences, both of which were also fulgurised, the last occasion being in 1926.

Rafin's statistics of the operation of suprapubic cision, quoted by Sir J. Thomson Walker,[2] show mortality-rate of 3·8 per cent. in 156 cases, and currence in 28 per cent. The corresponding figures this series (taken only from traced cases) were 2 per cent. and 43 per cent. respectively. It must, wever, be borne in mind that many of the cases this series were definitely carcinomata, whereas afin's statistics relate only to papillomata, and are, erefore, likely to be much more favourable.

Conclusions.

1. Epithelial vesical tumours have a high rate of ortality, in spite of treatment.
2. Males are more susceptible to the disease than males, in the proportion of 3 to 1.
3. Papillary tumours tend to recur in a large mber of cases; in this series in 41·4 per cent.
4. The diagnosis of malignancy is extraordinarily fficult in many cases, and pathological examination nnot be relied upon.
5. Treatment of the tumours by means of supra-bic excision seems to yield slightly more favourable sults than defulgurisation.

I should like to acknowledge my indebtedness to Cuthbert Wallace, director, and Mr. B. C. Maybury, sistant director, of the Clinical Surgical Unit, St. omas's Hospital, for their useful suggestions and vice in the compilation of this thesis; to Mr. C. A. R. tch, for the use of his own records; to Mr. C. V. trick, late surgical registrar, for facilities in looking the records, and to Miss J. E. Creese, secretary to e clinical units, for her valuable assistance in helping trace a large number of patients.

[2] A System of Surgery, ii., 912.

INFECTION WITH *B. DYSENTERIÆ* SONNE.

A FATAL CASE INVOLVING THE SMALL INTESTINE AND SIMULATING FOOD POISONING.

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THE recovery in the College of Medicine laboratory, Newcastle-on-Tyne, of dysentery bacilli from a considerable number of undiagnosed cases has led during recent years to an increase in the number of specimens submitted and a steady rise in the number of positives. The majority of the cases have been comparatively mild, with definite symptoms, but there has been a proportion, mainly in young children, with ill-marked signs, in which the disease has been fulminant and the organism isolated post mortem. An interesting point is that on more than one occasion the organism has been isolated very many hours after death; this raises the question whether its unusual persistence may not be related to an absence of bacteriophage similar to that lately described by d'Herelle and Malone[1] in acute cholera.

Until recently, all these fatalities had resulted from one or other variety of *B. dysenteriæ* Flexner, but in the following case the organism proved to be the bacillus first described by Sonne,[2] of Copenhagen, and now usually known by his name. The common experience is that this organism gives rise to mild attacks, but Mita,[3] in describing two organisms which he named pseudo-dysentery A and B, recorded six fulminating and fatal cases in a total of 73, although most of them were mild.

Smith[4] seems to claim that Mita's organisms are one and the same with *B. dysenteriæ* Sonne; their reactions, as described, are identical. Cultures, obtained from the National Collection, were found not only to give precisely similar reactions to those of the Sonne organism, but also to agglutinate well with the Oxford Sonne serum.

CASE 1.—The patient was a boy, aged 11, whose family consisted of father, mother, three sons, and a daughter. On May 16th, 1928, he had a severe headache, complained of tiredness and went to bed, but by next day had recovered. On the 20th, at about 10.30 A.M., he complained of pains in the stomach, which were succeeded by diarrhœa with brown slimy motions, and in the evening by several attacks of vomiting. At 5 A.M. on the 21st he was found in bed unconscious and incontinent. He was admitted to the Infectious Diseases Hospital at 1 P.M. the same day. He remained unconscious, vomited once—greenish fluid with mucus—and, still incontinent, with blood and mucus in the motions, he died at 8 P.M.

The post-mortem examination, held 13 hours after death, revealed marked congestion, chiefly of the ileum and cæcum and to a lesser extent of the descending colon. The adjacent lymphatic glands were slightly enlarged and there was definite splenic enlargement. The heart, liver and kidneys showed definite toxic changes. No gross pathological change was detected in the central nervous system. The stomach and a portion of small intestine and of colon were ligatured and sent direct to the laboratory, together with the spleen, but no blood could be obtained. The colon and stomach were found to contain adhesive mucus and films from the former showed inspissated epithelium. The portion of small intestine, which was inflamed, contained blood-stained liquid fæces, and films showed this to consist mainly of red-blood and pus cells.

Cultures, both direct and after brilliant green reinforcement, were sown on MacConkey plates from the contents of the hollow viscera and the spleen. No pathogenic organisms were obtained from the stomach, colon, or spleen, but the plates from the intestine showed large numbers of white colonies with crenated edge and heaped-up centre, which in 24 hours gave the reactions of *B. dysenteriæ* Flexner. They differed, however, in the following particulars, which have been found to be very suggestive of *B. dysenteriæ* Sonne. Growth was unusually profuse and there was a tendency to

sedimentation, while production of acid from glucose and mannite was more marked after 24 hours than is usual with *B. dysenteriæ* Flexner. Brilliant green seemed to have comparatively little inhibitory effect, a point also noted but not recorded with a previous case.[5]

Subsequently the reactions changed in the manner characteristic of *B. dysenteriæ* Sonne, including the late clotting of milk. Nine colonies give similar reactions and with five of these agglutination was tried against polyvalent Flexner, typhoid, and a rather old "Sonne" serum. There was a total absence with the first two, but all showed more or less agglutination with the last. The most agglutinable strain was then tried against the Oxford serum, and agglutinated to practically the same titre as the homologous emulsion, although it failed to show a trace with the five Flexner-type Oxford sera.

Inquiry into Food Ingested by the Patient and the Rest of Family.

The patient appears to have partaken of the ordinary meals of the family up to May 20th, including sausage for dinner on the 19th, but none of the others showed any signs of illness at the time. In addition, he had ice-cream on the 19th and some whelks about noon of the day (20th) on which he first developed severe symptoms.

One of his brothers (A), about a month previously, together with two other boys, one (Case 2) living in the upper flat of the same house and one (B) further along the street, ate some bruised fruit and all became ill. A and B had evanescent symptoms, but Case 2 died after a few hours' illness. The father of my patient, aged 53, was ill from May 31st to June 3rd, with pains in the stomach and slight diarrhœa, which he ascribed to drinking some water from a "runner" in the country while on holiday on the 28th. None of the other members of the family seemed to have been ill.

The family, of which the second fatal case was a member, lived, as already mentioned, in the upper flat, and consisted of father, mother, and three children under 12.

CASE 2.—This boy, aged 7, after eating the bruised fruit on April 11th, became ill at 8 P.M. of that day, with pains in the head, vomiting, but no diarrhœa, and died three hours later. The death was inquired into by the coroner and a post-mortem was held, but unfortunately, owing to a misunderstanding, the gut was slit from end to end during the autopsy and washed, so that when it arrived at the laboratory it was not possible to carry out a proper bacteriological examination, and no pathogenic organisms were isolated.

Dr. G. E. Stephenson, who performed the post-mortem, has kindly given an account of the findings:—

"Stomach, duodenum, ileum and large intestine all showed hyperæmia. There was in the ileum, especially in the upper part, well-marked swelling and hyperæmia of Peyer's patches, with general hyperplasia of lymphoid tissue, there as well as in large intestine. The spleen was slightly enlarged and the liver showed an acute toxic change. No gross naked-eye change was apparent in the other organs."

This boy is said, with several others, to have had some ice-cream on the previous day, but there is no evidence to incriminate this. In addition to the three boys, the father of Case 2 is said to have suffered from diarrhœa on the night of April 11th, but otherwise there is no history of illness in the family.

The Question of a Carrier.

As soon as it was determined that the organism isolated from Case 1 was *B. dysenteriæ* Sonne inquiry was made whether any members of the two families had been in districts where the disease has been prevalent. None of the family gave such a history, but the father of Case 2 had been in Glasgow for eight months, and only returned at Easter, just before his son became ill and died. This is rather a coincidence, although there was in this case no direct evidence of the nature of the infection, and the father's blood and fæces, when examined on one occasion, proved negative. The blood and fæces of the entire family of Case 1 were examined on two occasions, and on the first an organism giving the typical Sonne reactions was isolated from the fæces of the father and the daughter. Tested against Oxford Sonne serum these proved inagglutinable, but eventually, after considerable subculture, they displayed some degree of agglutinability. Curiously enough, however, an organism was isolated in large numbers almost at the same time from an entirely unconnected case, a girl of 1½ years suffering from dysenteric symptoms, and this gave similar reactions and proved persistently inagglutinable even after subculture. The blood serum of the family of Case 1 showed no evidence of agglutinins against the organism isolated.

Discussion.

Judging from this case and from Mita's experience it would appear that the Sonne bacillus may give rise at times to severe enteritis and fatal toxæmia. Wiseman,[6] in describing a Glasgow outbreak of enteritis due to the Sonne bacillus, has recently called attention to the occurrence of inagglutinable types of the organism. This is borne out by my case and is interesting in view of the three outbreaks of food poisoning, with three fatalities among children (recorded by Savage and Bruce White[7]), in which the organism isolated gave the reactions of Sonne and proved inagglutinable with a specific serum, although it was partially agglutinated by a serum prepared from Getting's bacillus.

No definite evidence of the source of infection could be obtained, and it is quite possible that the dietary indiscretions which preceded the illness of the two boys and the father may merely have served to fan the flame of an already existent but dormant infection. The father, at all events, was found later to be harbouring the organism.

Addendum.—Since this paper was written a very similar case has been recorded by Howel Evans. Dr. W. M. Scott, of the Ministry of Health, to whom the cultures were sent, has since found that all four strains agglutinate well with a Sonne serum.

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A SIMPLE METHOD OF PERFORMING ARTHROPLASTY IN TRUE ANKYLOSIS OF THE JAW.

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IN the excision of the mandibular condyle surgical freedom is limited in three directions: below, retraction may stretch the facial nerve; above, the brain has more than once been injured; and, on the medial side, the internal maxillary artery lies close to the neck of the mandible. Tubby[1] figures 12 different incisions for excising the joint—a sign that none is satisfactory—and whichever the surgeon employs he is cramped if he uses ordinary tools. This constraint and risk of injury disappear with the use of the special drill devised by Hudson for opening the skull. Two advantages make this well-known drill the instrument of choice for removing bone in ankylosis of the jaw: (1) it can be used in a cramped field, thus leaving no excuse for stretching the facial nerve; (2) it jams directly it perforates, and does no injury to brain or vessel. The Hudson drill does not fail to stop provided the bone can resist sufficiently to prevent the drill being pushed through it. I have once seen the drill plunge into a dog's cerebellum but

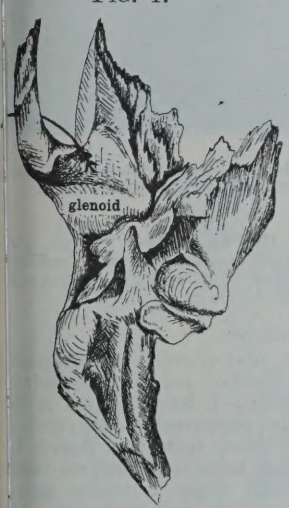
[1] Tubby, A. H.: Deformities, including Diseases of the Bone and Joints.

arned by this accident, we have been able to avoid it a series of more than 40 intracranial experiments, ade in collaboration with Prof. Heathcote. We ve learnt that the drill can safely be used on very in bone if the pressure is gentle and discriminate. here is, of course, no risk of unintentional penetration hen drilling the bony mass in true ankylosis of the w.

The Operation.

The tragus is a useful landmark, since the normal e of the joint, continued back, bisects its base. e joint lies one finger-breadth in front of it. The cision begins in front of the tragus, immediately terior to the pulsation of the temporal artery; it tends for one and a half inches along the lower rder of the zygomatic arch. From the hinder end this cut a second is made, at right angles to the first, tending vertically for four inches above the zygoma d for half an inch only below it. This incision is, course, a common one for arthroplasty of the jaw, d—provided the Hudson drill is used—gives good cess. It is my practice here, as in every "clean" eration, to apply side-curtains. They are fixed to e skin by means of Michel clips, as I have recommended elsewhere for small or multiple incisions.[2] this way the surgeon is not embarrassed by the ndles of towel-forceps. A clip bisecting the base the tragus marks the level of the normal joint. e site of ankylosis is exposed by displacing downrds and forwards the hindmost fibres of the masseter scle. The three bits of the Hudson drill, usually numbered 1, 2, and 3, are used in this order to remove the ankylosing bone, just as they are used in drilling the skull, the bits numbered 2 and 3 enlarging the hole made by the first. All these jam directly they have pierced the bone.

FIG. 1.

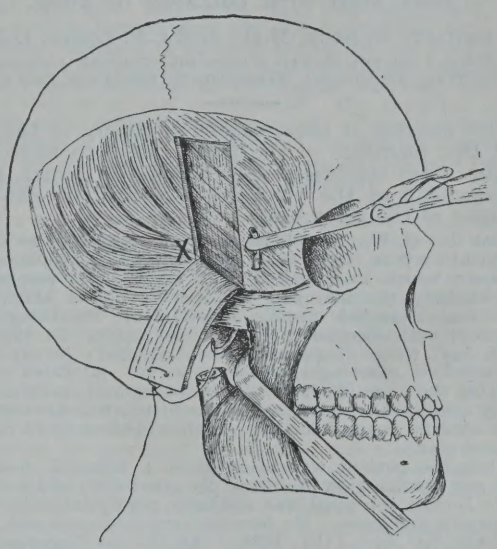


glenoid fossa of the temporal ne seen from below, showing w the free arch of the zygoma re becomes a shelf. The ture guiding the fascial flap ust—like the arrow—avoid e shelf and go *forward* under e arch.

The Fascial Flap.—A flap of fascia is next cut—either from the temporal fascia itself or from the fatty connective tissue covering it—for interposition between the neck of the mandible and the site of the glenoid cavity. Writers vaguely advise that this flap be sutured into place, which is not easy to do as the bottom of the deep, narrow wound is unsuited for placing a stitch. A neat adjustment can be made by a simple manœuvre suggested to me during an ration by my former clinical assistant, Dr. Edward ek. The middle part of a catgut suture is fastened o he free extremity of the flap and, by means of a ed needle, each end of the catgut is brought in u from below upward, deep to the arch of the yoma. The needle goes through the temporal n cle and the flap is drawn down into place by ng on the suture; it is then made fast by knotting h ends of the catgut on the temporal belly.

he Hinge.—A detail of anatomy in the skull makes t operative to hinge the flap in such a way that vl n the suture guiding it is drawn under the zygoma h flap will fully separate the raw faces of the new oi . Fig. 1 shows that it is not possible to pass a ne le directly round the zygoma at the glenoid site, on t that place the free bony arch becomes a shelf attached to the skull. The needle which carries the guiding suture must, therefore, travel upward beneath the arch in a forward direction. If, then, the base of the flap is parallel to the zygoma, the fascia—strained forward by the suture and folding on a transverse hinge—will come to lie in a futile, ectopic,

FIG. 2.



The flap is outlined by a long cut in front and a short cut behind; its pedicle has therefore an *oblique* hinge. The flap folds vertically when pulled forward by the guiding suture and so covers the glenoid area. (A stitch at X fixes the centre of motion.)

position in front of the glenoid site. The flap, however, can be made to lie properly by providing its pedicle with a hinge which is oblique; it then folds vertically down under the forward strain (Fig. 2). The correct slope of the hinge is obtained by cutting the flap in the form of an inch-wide strip, with its free end three inches above the zygoma, taking care that in front the incision goes right down to the zygoma, and behind stops a thumb's-breadth short. The flap, hinged obliquely in this way at the pedicle, would of itself droop backwards, but under the forward pull of the guiding suture it takes a middle course and folds straight down into place. A final stitch serves to fix the centre of motion.

After-treatment.—The patient is encouraged to chew and should begin to try when he recovers from the effects of anæsthesia. A boy, aged 15, who had had a bilateral ankylosis of the jaw for three years, was able to chew meat on the fourth day after his second arthroplasty. The first arthroplasty was done ten days before the second.

My thanks are due to Dr. Boris Boulgakow, Curator of the Museums of the Faculty of Medicine, Cairo, for the two figures which illustrate my paper. The finishing touch of the oblique hinge I owe to my wife.

[2] Henry, A. K.: Brit. Med. Jour., 1927, i., 663.

LIVERPOOL OPEN-AIR HOSPITAL FOR CHILDREN.—On Saturday last the Earl of Derby opened a new artificial light and treatment block which has been added to this hospital at a cost of £17,000. In addition to the artificial light treatment rooms the block contains an operating suite, a dental department, plaster and X ray rooms, gymnasium, laboratory, and dispensary.

FEE FOR REPORT TO CORONER.—The Finance Committee of the Worcestershire County Council, having received a suggestion from the local branch of the British Medical Association that medical practitioners who supply to coroners at his request a written report in connexion with a death should be paid a fee of 10*s.* 6*d.* for the report, and having been informed that it is legal for local authorities to authorise such payment, has recommended the Council to pay the fee.

Clinical and Laboratory Notes.

TWO CASES OF FAMILIAL ENLARGEMENT OF THE THYMUS

ASSOCIATED WITH COLLAPSE OF LUNG.

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THE interest of these cases lies chiefly in the fact that two members of the family seem to have died of the same condition—a syndrome in which gross enlargement of the thymus is associated with the collapse of the right lung.

CASE 1.—G. W., aged 5 months, was admitted to Guy's Hospital on Nov. 10th, 1926, complaining of dyspnœa and cyanosis, which had existed since birth. The respiration was entirely thoracic and inverted—i.e., the abdominal wall was retracted during inspiration. Breathing was laboured, with occasional sighing respiration. Previous to an X ray, three diagnoses were suggested: (*a*) Anterior poliomyelitis affecting the phrenic nerve. (*b*) Birth injury affecting the phrenic nerve. (*c*) Diaphragmatic hernia. An X ray examination taken without a bismuth meal showed a large opacity at the left apex which was thought to be the thymus gland.

While the patient was being given a bismuth meal for an X ray examination in view of the possibility of diaphragmatic hernia, the meal was suddenly regurgitated through the mouth and nose. He became very cyanosed and died suddenly on Nov. 11th, 1926. At the post-mortem the thymus was found to be about three times its normal size, weighing 26 g., and was partially adherent to the pericardium. There was a collapse of the upper and middle lobes of the right lung and partial collapse of the lower lobe of the right lung.

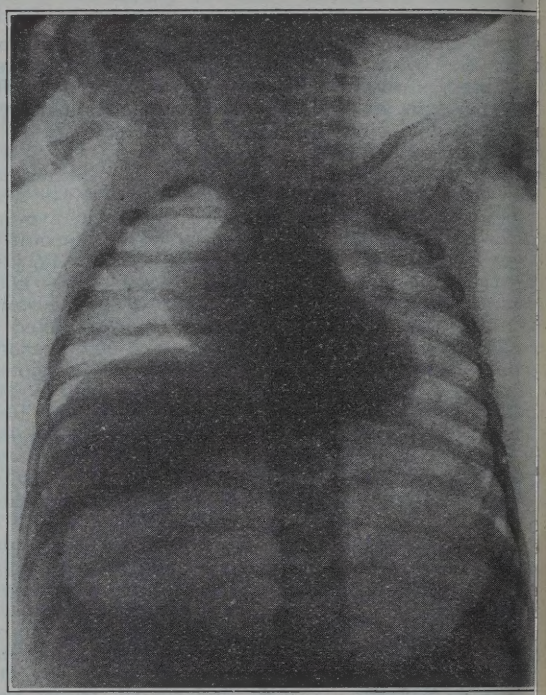
CASE 2.—E. W., sister of G. W., was admitted to the Royal Waterloo Hospital with respiratory embarrassment for observation and diagnosis on July 25th, 1928. She was 5 months old. Two months before admission she had shown signs of difficulty in respiration. This became more marked, so that the child could only feed at the breast for five minutes at a time. The confinement had been normal and the weight at birth 6 lb. 11 oz.

On admission the child was ill-nourished, pale, but not cyanosed. The finger-nails and ends of the fingers were normal. The cry was weak and infrequent. She lay in the bed with the head fully retracted, but the retraction was not fixed. The striking feature was the marked inspiratory effort, which ended in a short grunt and involved the whole accessory muscles of respiration, abdominal, thoracic, and alæ nasæ. The respiratory rate was, on an average, 45 per minute. Temperature averaged 99° F. and the pulse 140. The mouth and upper air passages were clear, the heart not displaced; rhythm and heart sounds were normal. The chest was not retracted, but there was practically no movement of the right side. The percussion note was dull from the base to the apex, both anteriorly and posteriorly on the right side. Breath sounds were very weak and distant, the air entry being very feeble. The breathing was vesicular and no adventitious sounds were heard. The left side of the chest appeared normal. Nothing abnormal could be felt in the suprasternal notch, and there was no enlargement or displacement of the liver or spleen. No enlarged glands were palpable.

A skiagram (here reproduced) showed a heavy shadow extending from the right of the mediastinum upwards into the neck; the right side of the diaphragm was elevated. The stomach was large and distended with gas. The right lung has evidently re-expanded to some extent. The shadow was compatible with thymic enlargement.

The child took her feeds well and was at the start fed partly by breast, but gradually lost weight in spite of all feeding efforts and died on August 2nd, 1928.

The *autopsy*, performed by Dr. H. W. C. Vines, showed the body of a well-nourished infant with no external injuries. When the thorax was opened, the thymus appeared to be enlarged, the lungs collapsed and small. The thymus weighed approximately 56 g. The lungs were slightly congested. The left lung floated in water, but the right (smaller) lung did not. Their appearance suggested collapse or failure to expand rather than pathological consolidation. The trachea showed no gross evidence of compression. The heart showed minute petechial hæmorrhages under the visceral pericardium. The veins were dilated. The liver, spleen, and kidneys were congested. The intestines did not show any very marked enlargement of the lymph follicles. There were numerous rather enlarged lym glands in the mesentery. The cortex of the suprarens appeared to be rather thin, and the medulla not very evide There was no evidence of hæmorrhage. Microscopica the thymus appeared active and vascular. Hassa corpuscles were numerous and large. The lung show



CASE 2.—Skiagram showing heavy shadow extending from right of the mediastinum upwards into the neck.

collapse and congestion; the mesenteric lymph gla simple enlargement. In the suprarenals the medull cells were present in patches, but appear to have b replaced by vascular connective tissue.

Remarks.

In a large number of post-mortem examinatio where death has occurred either under anæsthetic r suddenly in young children, I have found a la thymus, but have never previously observed a collapse of the lung. These, however, have be acute cases where there has been no previous hist of respiratory distress. In Case 2 there was evidence of tracheostenosis or compression. It difficult to say definitely whether the right lung h ever expanded or whether the collapse was of po natal origin. The absence of recession and the n displacement of the heart, together with the X r appearances, would seem perhaps to indicate a grad collapse.

Dysthymic constitutions are well recognised having constitutional disturbances, delayed grow and sometimes rickety changes. The noisy respi tion, with a slight souffle, best heard in the horizon position, are well known. Acute phenomena p away but leave the child in a state of torpor wh may give rise to anxiety. Percussion and skiagra especially when there is a large mediothoracic shad greatly increased in its upper part, may give a cl

Various reasons have been suggested for death d to thymic conditions—e.g., vagal stimulation, co pression of inferior cardiac nerve, stimulation cardiac centres producing inhibition, compression phrenic nerve producing diaphragmatic paraly lymphotoxæmia. Much discussion has centred rou the question as to whether direct pressure of t thymus on the trachea is responsible for the dyspn

In Case 2 the retraction of the head would tend project the vertebræ forward and diminish t

perior opening of the thorax. Since the enlargement was chiefly on the right side, obstruction, if struction there was, would probably be on the ght main bronchus, causing the abnormal condition the right lung. There was no evidence of tracheonosis in this case and none to support J.-A. mmar's contention that most cases of thymic ath are due to compression of the trachea. Through courtesy of Dr. F. Parkes Weber, I have traced account[1] of familial sudden thymic death, but the cases recorded above death was not sudden or expected.

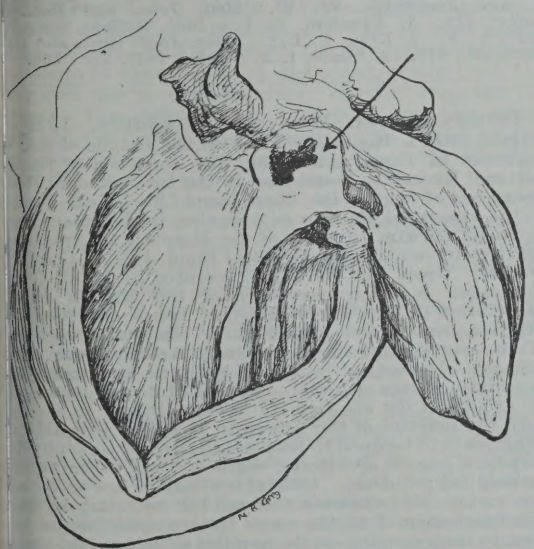
I have been unable to trace in the literature a scription of familial cases with enlargement of the ymus associated with a collapsed condition of the ht lung.

I am indebted to Mr. H. L. Eason and Dr. H. C. meron, of Guy's Hospital, for the account of Case 1, d to Dr. A. S. Woodwark for permission to publish se 2. I should also like to thank my house ysician, Dr. C. G. Walker, for help with the clinical vestigation.

A CASE OF ANEURYSM OF THE MITRAL CUSP.

By W. S. Whimster, M.B. Lond.,
IDENT MEDICAL OFFICER, ANCOATS HOSPITAL, MANCHESTER.

During the course of malignant endocarditis terial emboli break off from the affected valves and distributed all over the body. These emboli use septic infarction of the organs in which they arrested. When, as not uncommonly occurs, the e of arrest is a vas vasorum, a mycotic aneurysm y follow; this event may take place in any artery.



Drawing of heart showing aneurysm of the mitral cusp.

Osler reports a case in which five such aneurysms were present in the thoracic aorta. Many other cases have been put on record, and every artery of any size has been affected. More rarely the site of aneurysm formation is the heart itself, and in such cases the lesion may involve the valves. According to Osler (System, 1908), the commonest site for such an aneurysm is the aortic valve, in which case the cusps are dilated towards the ventricle. Less commonly, a similar condition occurs in the mitral valve, the aortic cusp being more frequently affected than the posterior. In any of these sites the aneurysm may rupture or may be filled with fibrin. The following case illustrates the commoner type of mitral aneurysm.

[1] Handbuch der Kinderheilkunde, 3rd edition, vol. i., 1923.

A girl of 15 was admitted into Ancoats Hospital under the care of Dr. Kletz on Feb. 2nd, 1928, suffering from pyrexia. The previous history showed measles and chickenpox. For many years she had been troubled with rheumatic pains and stiffness of the knees, but recently she had been free from them. Her present illness began insidiously at Christmas, 1927, with headache and severe lassitude. During the first week in January she had a sensation as of a purple veil drawn over the outer half of the visual field of the right eye. After a few days this disappeared. She then tried to resume work but had to return to bed. The headache increased in severity during the last week before admission; she became very short of breath and purple painful spots appeared on the fingers and toes, remained for a day or so and disappeared. The sensation of the purple veil over the right eye returned. For a day or so she complained of pain in the right loin, but had no hæmaturia. There had been no indigestion and the bowels were regular.

Examination.—Patient was extremely pale, with a floury skin and slight malar flush. Intelligence and cheerfulness above normal, as is frequently noted in this disease. Nothing abnormal was found in the alimentary and respiratory systems. The apex-beat was found in the sixth space in the anterior axillary line. A very harsh systolic murmur was heard in the mitral area. This was propagated to the axilla and was heard behind. There were systolic and presystolic murmurs in the aortic area. The heart rhythm was regular. Blood pressure was 110/80. There were some petechiæ, red and painful to touch, the feet and conjunctiva being most affected. There was a small hæmorrhage in the macular region of the right fundus oculi, which probably accounted for the purple veil sensation.

During the course of the disease, which lasted for three weeks in hospital, no change was found in the heart. The temperature was swinging up to 102° F., but blood culture was negative. At no time was the spleen felt.

Post-mortem Examination.—The heart was much enlarged. The right side was normal, the left side greatly hypertrophied and dilated. The mitral valve was encrusted with recent vegetations. In the aortic cusp of the valve was an aneurysm extending three-quarters of an inch into the auricle. This was ruptured at its apex, and the margins were covered with vegetations. The aortic valve was also scarred and encrusted with recent vegetations. The only other abnormality found was an old infarct of the left kidney.

In all probability the rupture of the aneurysm had taken place some weeks previously and the resulting incompetence was responsible for the harsh systolic murmur.

I am indebted to Dr. Norman Kletz, under whose care the patient was admitted, and to Dr. Arnold Renshaw, pathologist to the hospital, for permission to publish this case.

THE BROMSULPHALEIN TEST IN EARLY DISEASE OF THE LIVER.

By A. D. Fraser, B.Sc., M.B. Glasg.,
PATHOLOGIST TO THE BRISTOL ROYAL INFIRMARY.

The bromsulphalein test for liver function, introduced by Rosenthal and White,[1] depends upon the capacity of the liver cells to remove the dye phenoltetrabromphthalein sodium sulphonate from the blood stream and excrete it in the bile.

These authors found that when a certain amount of the dye—2 mg. per kg. of body-weight—was injected intravenously, none of it could be demonstrated in the blood 30 minutes later if the liver were normal. In marked liver disease, however, there was retention of dye, the amount retained being apparently proportionate to the degree of damage to the liver. No cases of early liver disease were examined by Rosenthal and White, but they suggested that the amount of dye retained five minutes after the injection would indicate the extent of the liver insufficiency. In their series of normals the dye retention at the five minute interval varied from 20 to 50 per cent., with an average of 35 per cent. There were no local or general ill-effects from the use of the dye.

Others have made use of this test, and report favourably on it as a hepatic function test in advanced disease of the liver. Friedenwald and Armstrong[2] found retention of the dye in catarrhal jaundice,

TABLE I.—*Early Disease of the Liver.*

Sex.	Age.	Clinical diagnosis.	Units of bilirubin in serum.	Blood-sugar per cent.						Bromsulphalein t. Percentage of d. retained.	
				Before lævulose.	½ hr. later.	1 hr. later.	1½ hr. later.	2 hr. later.	Rise in mg. per cent.	5 mins.	30 mi.
M.	26	Manganese toxæmia.	0·5	0·102	0·117	0·133	0·117	0·112	31	15	0
M.	40		0·25	0·083	0·108	0·105	0·104	0·101	25	10	0
M.	40		0·5	0·090	0·120	0·121	0·120	0·120	31	20	0
M.	25		0·5	0·090	0·090	0·095	0·095	0·090	5	30	0
M.	39		0·25	0·099	0·105	0·097	0·093	0·089	6	10	0
M.	21		0·5	0·101	0·115	0·112	0·093	—	14	25	0
M.	55		0·5	0·108	0·129	0·122	0·122	0·111	21	15	0
M.	28	Banti's disease.	0·5	0·098	0·110	0·133	0·125	0·104	35	10	0
M.	15		0·5	0·097	0·133	0·130	—	0·130	36	20	0
F.	47		0·5	0·100	0·137	0·114	0·104	0·102	37	15	0
M.	37	Catarrhal jaundice.	7	0·136	0·156	0·185	0·173	0·166	49	20	0
M.	21		8	0·085	0·101	0·124	0·117	0·114	39	15	0
F.	46		2·5	0·100	0·115	0·124	0·138	0·123	38	20	0
F.	27		14	0·102	0·134	0·126	0·108	0·104	32	10	0
M.	64		4	0·113	0·150	0·136	0·133	0·120	37	25	0
M.	26		6	0·097	0·115	0·152	0·134	0·126	55	15	0
M.	60	Specific liver.	9	0·110	0·129	0·133	0·142	0·133	32	10	0
F.	19	Acholuric jaundice.	7	0·100	0·129	—	0·120	0·103	29	20	0
F.	35	Hyperemesis gravidarum.	8	—	—	—	—	—	—	15	0
F.	47	Familial jaundice.	8	0·080	0·131	0·120	0·114	0·109	51	10	0

cirrhosis of the liver, and carcinoma of the liver. A negative result in two cases of cirrhosis of the liver with free abdominal fluid was regarded by them as due to compensatory hyperplasia of liver cells. Vaughan's[3] opinion was that in obstructive jaundice, and in jaundice due to liver damage, the bromsulphalein retention agreed roughly with the bilirubin retention. King[4] and Siegel[5] considered that the test might prove useful for the differentiation of nephritic and pre-eclamptic types of toxæmia and of neurotic and toxic vomiting.

To determine the usefulness of this test in early liver disease a series of patients with suspected minor degrees of liver insufficiency were chosen, and the lævulose-tolerance and bromsulphalein tests were compared. In each case also some indication of the degree of disturbance in pigment metabolism was obtained by estimating the blood bilirubin by van den Bergh's method. The technique used in the dye test was as recommended by Rosenthal and White, and the bromsulphalein was obtained in 5 per cent. solution from Messrs. Hynson, Westcott, and Dunning, of Baltimore, U.S.A. The exact quantity, in cubic centimetres, of this 5 per cent. solution to be injected was obtained by dividing the patient's weight in pounds by 55. The amount of dye retained in the blood was determined at intervals of 5 and of 30 minutes.

For the lævulose-tolerance test half-hourly estimations of the blood-sugar were made for two hours after the ingestion of 50 g. of lævulose on a fasting stomach. A rise in the blood-sugar of 20 mg. with a non-return to normal was considered positive.

The results of these tests are given in Table I., and the figures obtained with the dye test in six normal individuals are shown in Table II.

TABLE II.—*Normals.*

Sex.	Age.	Bromsulphalein test. Percentage of dye retained.	
		5 minutes.	30 minutes.
F.	44	25	0
M.	32	15	0
M.	45	20	0
M.	38	10	0
F.	26	15	0
M.	52	15	0

Summary and Conclusions.

Of 20 cases with early liver disease the lævulose-tolerance test was positive in 16, while the bromsulphalein content of the blood serum 5 and 30 minutes after injection of the dye showed no variation from the normal. Ten of the 16 had bilirubin re tion. The five-minute interval retention of br sulphalein does not appear to afford much informat in early liver disease, nor does the retention bromsulphalein run parallel with the bilirubin re tion.

I am indebted to my colleagues on the staff of Bristol Royal Infirmary for their kindness in allow me to examine their patients.

References.—1. Rosenthal, S. M., and White, E. C.: J Amer. Med. Assoc., 1925, lxxxiv., 1112. 2. Friedenv J., and Armstrong, W. W.: Med. Jour. and Rec., 1 cxxiv., 679. 3. Vaughan, S. L.: Bull. Buffalo Gen. H 1927, v., 3. 4. King, E. L.: Amer. Jour. Obst. and Gy 1926, xii., 577. 5. Siegel, I. A.: Ibid., 1927, xiv., 300.

INTERNATIONAL HOSPITAL CONGRESS, 1929.—August 29th, at the headquarters of the League of Red C Societies in Paris, a meeting was convened of the In national Executive Committee of the International Hosp Congress, of which Dr. René Sand, Technical Couns of the League of Red Cross Societies, is chairman, and Lewinski-Corwin, Director of the Hospital Information Service Bureau, United Hospital Fund, U.S.A., is secret general. Great Britain was represented by Mr. J. Cour Buchanan, honorary secretary of the British Hosp Association; Mr. W. H. Harper, house governor of Wolverhampton and Staffordshire Hospital; and Mr Watts, representing the Incorporated Association of Hosp Officers. The committee agreed with the American Hosp Association in its proposal to hold the International Cong at Atlantic City on June 13th–15th, 1929. In accord with the practice of the American Hospital Association. Congress is to be open to hospital administrators, physici surgeons, nurses, architects, engineers, and others intere in hospital problems. Official invitations are to be sen the various Governments through the Secretary of Stat Washington, and at the same time a questionaire wil sent to each country on its hospital situation and statis The American Hospital Association proposes to orga a tour of inspection of the hospitals of New York, P adelphia, Baltimore, and other centres for the benefit of official delegates from June 5th to 12th. The object of Congress, the first of its kind, is to facilitate personal conta to provide for exchange of information, and to pron discussion among persons interested in hospitals through the world, whether public or voluntary. The prelimi programme provides for an address on essential hosp functions, and this will be followed by discussions on hosp planning in relation to economy and efficiency, the prob of hospital economies, the respective fields of public private hospital work, the questions related to psychopa hospitals and hospitals for chronic disease, and various o matters such as the creation of an International Hosp Association. For further particulars of the Internati Hospital Congress, the membership fee of which is five dol inquiries should be addressed to Dr. René Sand, 2, Ave Velasquez, Paris VIII.; or to Dr. E. H. Lewinski-Cor the American Hospital Association, 2 East 103rd St New York.

Reviews and Notices of Books.

E GENESIS OF EPIDEMICS.

By CLIFFORD ALLCHIN GILL, M.R.C.S., L.R.C.P., D.P.H., D.T.M. & H. Eng., Director of Public Health, Punjab. London: Baillière, Tindall and Cox. 1928. Pp. 550. 21*s*.

HE havoc wrought throughout the world by lemic diseases makes the solution of the problem heir causation one of peculiar interest and import-e. Theories and speculations to account for their urrence have not been lacking; and, although ny of these have been proved to be inconsistent h the facts revealed by advancing medical know-ge, there is still no unanimity of opinion among lemiologists. It is only from prolonged and ematic effort to collect, arrange, and correlate the facts that a consistent and intelligible theory ikely to emerge. We are, therefore, indebted to C. A. Gill, director of public health in the Punjab, has published the outcome of a painstaking ly of epidemics, in particular of malaria. The ject matter is presented in five parts, of which first is introductory, consisting of a brief account he views held by various authorities as to the se of epidemics, a critical analysis of the methods loyed in epidemiological research, and a summary he author's own theory of the genesis of epidemics. material from which the theory has been evolved resented in detail in the second part of the work, re an interesting account of the investigation of lemic malaria is followed by a note on the epide-logical features of influenza and plague. Since lemicity is confined neither to diseases of which causative organisms belong to closely allied ups nor to those exhibiting similar modes of trans-sion, these three widely diverse diseases are well sen as examples. In Part III. the general appli-lity of Dr. Gill's theory to all epidemiological homena is examined and discussed, while Part IV. levoted to a consideration of the response of ase to the influence of evolution and the effect limate on health and disease in the light of the s propounded in the preceding chapters. Finally, 'art V., the failure of certain diseases to assume emic and pandemic characteristics is shown to no way inconsistent with the general argument; ain practical deductions from the study are marised, and their bearing on the practice of entive medicine reviewed.

s a result of his study, the author has come to conclusion that the generic features of all epi-ics, irrespective of the nature of the *materies oi*, are the outcome of the same mechanism. ature exhibits a remarkable unity of design, and ould, therefore, be as unnatural to anticipate a rate mechanism of epidemicity in each specific se as to assume a separate act of creation in the of each zoological species." Dr. Gill's theory o the nature of this mechanism—the quantum ry—postulates that the essential factor in the ation of epidemics is a loss of equilibrium between lose of toxin and the degree of resistance, or, in , between infection and immunity. If we d an epidemic as the analogue in the community attack of disease in the individual, the theory mply an extension of existing knowledge con-ng individual infection, involving, therefore, er the adoption of any new principle nor the ulation of any fresh hypothesis. If this theory ltimately found to fit all the facts, the com-ty of the problem will be materially reduced future investigation simplified. The arguments nted in its favour are skilful, but not always incing. For example, the author says, "a en depression of communal immunity is less y to occur than a sudden increase in the amount fection, and it is consequently held that circum-es conducive to a sudden increase of the infec-quantum play a predominant part in epidemic explosions." An epidemic visitation is undoubtedly a sudden upheaval; but there is no apparent reason why the forces requisite to lead to a "loss of equilibrium" should be assembled in an equally dramatic manner. A gradual increase of susceptible persons—i.e., a gradual decrease in communal immunity—has, on this theory, as much chance of ultimately upsetting the balance as a gradual or sudden increase of the infection quantum. Again, "since, during their passage from one human host to another parasites are exposed, directly or indirectly, to the influence of meteorological conditions and atmospheric states, it is held that the latter are intimately concerned in determining the frequency and intensity of epidemics." This point of view has led Dr. Gill to attribute great prominence in the genesis of epidemics to meteorological conditions. It need only be noted that the length of exposure of organisms during their passage from one human host to another, at least in diseases spread by direct transmission, must be small; that under laboratory conditions, where meteorological variations are almost negligible, epidemics tend to occur and recur, and that the host as well as the parasite is susceptible to changes in weather conditions.

However, the author admits freely that the thesis put forward in this volume embodies few certainties and will occasion many doubts, and while his explanations are not entirely convincing, the detailed presentation of the facts leaves nothing to be desired, and on this account alone the work deserves warm commendation.

SURGERY OF CHILDHOOD.

By RICHARD WALTER BOLLING, M.D., F.A.C.S., Attending Surgeon, St. Luke's and Babies' Hospitals, New York City. London and New York: D. Appleton and Co. 1928. Pp. 390. 16*s*.

THIS book forms Vol. XV. of a series on clinical pædiatrics. The title of the volume is more comprehensive than its contents, since these do not include orthopædic subjects. There is thus no reference to talipes, congenital dislocation of the hip, or birth palsies, though 50 pages are devoted to fracture and epiphyseal separation. Joint tubercle has apparently been considered in Vols. VI. and VII., and hydrocephalus in Vol. V. We are not told where to look for a consideration of the tonsils and of mastoid infections; they receive scant notice in the volume under review. There are over 200 illustrations, and the X ray reproductions gain considerably by presenting the normal as well as the abnormal. This is a feature which might be widely imitated with advantage.

The book contains little that is new or provocative. Tannic acid in the treatment of burns and scalds is very properly advocated, but blood transfusion is advised for more conditions than most surgeons would consider necessary. A few of the author's opinions—e.g., those on appendicitis (p. 309)—are not generally held, but on the whole the book contains sound teaching. If it lacks balance and cohesion the fault lies partly in the scheme of producing units in a series of monographs.

PYODERMITES ET ECZÉMAS.

By Dr. R. SABOURAUD. With 149 original illustrations in the text. Paris: Masson et Cie. 1928. Pp. 284. Fr.60.

IN this work, the fourth of a series which includes previous volumes on seborrhœic dermatitis, squamous groups, and mycelial infections of the skin, the author presents a most comprehensive and careful study of the cutaneous coccal infections and their eczematous complications. Clinical photographs of typical cases, and many admirable microphotographs and diagrams depicting the actual causal organisms in situ, amplify the text and illustrate the immense scope of a subject which is here considered in three main sections, a fourth being devoted to treatment.

In the first section are described the various ways in which staphylococci can gain access to the skin; the frequency with which *S. aureus* is recovered on culture; the peculiar type of perifollicular abscess, the furuncle, and its necrotic sequela; Bockhardt's impetigo (which is not a streptococcal infection), and the consecutive alopecia sometimes noted in hairy regions. In the second chapter of this section the various forms of sycosis, nail infections and granuloma pyogenicum, due to *S. aureus*, are considered with a scrupulous regard for accuracy.

Section 2 is devoted to the streptococci. Impetigo is discussed in detail; intertrigo and its eczematous complications are then described, and eczema is considered from the bacterial aspect. It is admitted that the universality of the cocci and their low-grade specificity render all conclusions based on bacteriological findings vague and uncertain. The ætiology and nosological relationships of "eczema" are further elaborated in section 3. Some of the terms used, for example "eczematides," "coccides," introduce a finesse of diagnosis which makes a special appeal to the dermatologist, but which nevertheless has a practical bearing referred to later in the section on treatment. The study of this complex elaboration is much assisted by the photographs of actual cases, many of which recall the multiplicity of clinical types in which the author is striving to create some semblance of order, a task for which his famous treatise on the ringworm fungi has especially fitted him. The final section is a therapeutic synopsis of methods and formulæ of the old and well-tried French school. The lucid table of contents and a complete international bibliography are additional features in a most admirable production.

THE ULTRA-VIOLET RAYS.

Their Action on Internal Diseases and Use in Preventing Loss of Colour and Falling of the Hair. By ARNOLD LORAND, M.D. Vienna, Physician at the Carlsbad Springs, Czecho-Slovakia. Philadelphia: F. A. Davis Company. 1928. Pp. 258. $2.50.

THE title of the volume leads one to expect a study of the action of ultra-violet light on digestive, nervous, and ductless gland diseases. This has not been supplied; no effort has been made to study the action of light, apart from the many other methods of treatment employed, and no series of comparative cases is given. The statement is made here and there that better results were obtained when light treatment was superimposed on other methods, including gland extracts, iodine, mud-packs, and mineral spring water cures. The dosage employed is seldom stated in precise terms and the degree of erythema aimed at is not always given. The author attributes the reddening of the skin in strong sunlight to an irritation of the blood-vessels of the skin, and says that for this to occur the sympathetic (splanchnic) must positively be involved (p. 27). The book contains innumerable dogmatic statements for which no scientific proof is adduced. Dr. Lorand advocates light treatment as a means of lessening pain—e.g., by irradiation of the gall-bladder area in cases of gall-stones—and claims that the symptoms of old age are alleviated by the use of the mercury-vapour lamp; here, again, he does not limit treatment to ultra-violet light, but gives extracts of ductless glands and iodine as well (p. 95). The use of ultra-violet light for cosmetic purposes will hardly recommend itself to actinotherapists. The author states that after desquamation has occurred the complexion improves and that wrinkles disappear. It must be remembered, however, that mercury-vapour reactions are, as a rule, very painful, that turgescence of the skin is mostly transitory, and that this treatment may stimulate hair-growth in any irradiated part, not on the scalp only. The author's claim that light treatment is efficient in reducing obesity and in lowering blood pressure (apart from a small temporary fall) is not upheld by other investigators in this field; but since he uses light mainly as auxiliary treatment, he is not really in a posit to make specific claims for its efficacy. Sev chapters are devoted to the subject of the act of light in stimulating hair-growth and to the tr ment of greying hair, the work of Nagelschmidt this field being duly acknowledged.

We have nothing but praise for the way in wh the book is published; the clear type, the good bind and light weight, are an achievement at the moder cost of $2.50.

SPINAL NEURO-SYPHILIS.

La Syphilis Médullaire. By Dr. LORTAT-JAC Physician to the Saint-Louis Hospital, Pa and Dr. POUMEAU-DELILLE, Interne of the P Hospitals. Paris: Masson et Cie. 1928. Pp. 1 Fr.70.

THIS volume belongs to the series entitled *Collect Médecine et Chirurgie Pratiques*, and contains i concise form, for student and practitioner, prese day information on the varieties of spinal neu syphilis, their pathology, semiology, differen diagnosis, and treatment. Tabes dorsalis is exclud for no very obvious reason; combinations of ta with amyotrophy, with lateral column involveme with incomplete transverse "myelitis" are not infrequent as to suggest a fundamentally differ ætiology for parenchymatous as compared w interstitial manifestations, but the authors descr only the meningovascular types under the cho title. A good account is given of acute and chro meningomyelitis, gummatous forms, syphilitic m cular atrophy, and of rarer groups such as syphili combined sclerosis, and spinal compression of syp litic origin. A place is found for "pseudo-ta syphilitique" and "pseudo-sclérose en plaq syphilitique," although in our view these terms misleading and should be abandoned. Neither them should be characterised with the epit "pseudo," for the former is merely a tabetic vari with overflow from the posterior funiculi, while t latter is a multiple, disseminated, syphilitic "m litis." On the other hand, attention might have b drawn—since rarities are included—to the interest combination of systematised posterolateral sclero with amyotrophy.

The purpose of the authors, however, is well serv by this little vade-mecum.

GONOCOCCAL URETHRITIS IN THE MALE.

By P. S. PELOUZE, M.D., Associate in Urology a Assistant Genito-Urinary Surgeon, University Pennsylvania. London and Philadelphia: W. Saunders Company. 1928. Pp. 357. 24s.

IN this small monograph Dr. Pelouze has produ an excellent summary of modern methods in t diagnosis and treatment of gonorrhœa in the ma Methods of culture and identification of the gonococ are described; a feature of particular interest is t application of the action of the bacteriophage in t differentiation of the pathological urethral flo Special attention is drawn to the need of employin culture medium of correct hydrogen-ion concentrati In view of recent enthusiasm about the use of d thermy in the treatment of gonorrhœa, the surviv of gonococci in the author's cultures after exposure a temperature of 113° F. for 30 minutes, is no worthy. In an admirable account of the pathologi aspects of this condition, based chiefly on the classi work of E. Finger, Dr. Pelouze suggests that t spread of infection from urethra to epididymis is d to the passage of infected urine along the vas defere He comments on the low incidence of infection of t seminal vesicle in comparison with that of t epididymis and assumes that the former has natu immunity to infection. Surgical treatment f chronic infection of the seminal vesicles is advis only as a last resort. In the section on tre ment, no new departures are recommended; neith

ccines nor diathermy have yielded very favourable sults in the author's experience, and the action of riflavine and mercurochrome has proved disointing. The main maxims set out are thoroughss in diagnosis and gentleness and patience in atment.

The volume terminates with an excellent selection typical case histories followed by the author's mments. Readers will find this small book both reshing and stimulating, but some will be dispointed by the brevity of the practical details of hnique in treatment.

ODEL ANSWERS TO QUESTIONS FOR MENTAL NURSES set by the General Nursing Council. By HECTOR MACPHAIL. London: The Scientific Press; Faber and Gwyer, Ltd. 1928. Pp. 273. 5*s*.

THIS companion volume to the author's well-known ok, based on the questions set for the Medicoychological certificate, will be found equally useful students. His skill in putting clearly and conely the essential points required for the perfect swer is beyond praise. In the anatomical section re are, perhaps, rather more technical terms than really necessary, and the phraseology of the swers is rather that of the medical student than that the nurse. In the section on mental diseases and chology this fault has been ably avoided. A few nor points call for criticism: the definition of lusion on p. 227 has not been brought up to date; p. 147 para. 11 has been reversed, making incontice characterise fainting and not epileptic fits; and answer on glycogen omits mention of its storage the muscles; but, generally speaking, the book is narkably free from errors, and so pleasantly written t it will be found an attractive aid to study.

E RELATION BETWEEN LABYRINTH AND OCULAR MUSCULATURE.

Die Labyrinthreflexe auf die Augenmuskeln nach einseitiger Labyrinthextirpation. By Dr. R. LORENTE DE NÓ, Assistant in the Cajal Institute, Madrid. With 186 figures in the text and 22 plates. Berlin and Vienna: Urban and Schwarzenberg. 1928. Pp. 205. M.15.

THE work performed for Dr. Lorente de Nó's nograph has been conceived and carried out on a h level of scientific knowledge and skill. The book es the reader an insight into the technical and er difficulties and complexities surrounding the estigation of the relation between labyrinth and ular musculature, and is far from easy reading. obably it is well that this should be so; Dr. de Nó at pains to point out that in regard to the actual tomical connexions of central labyrinthine structes ignorance is not by any means dispelled, and his is true of morphology it is truer still of physioy. His book deals only with one aspect of labyrine function, yet it is based on uninterrupted earches during a number of years. The major tion is taken up with protocols of a large number personal experiments, mainly on guinea-pigs, in ich the labyrinth has been extirpated and ocular vements studied by a special technique. The author es us a highly technical discussion of his own clusions and of those of others, which is of interest inly to the specialist, and which, moreover, bodies abstruse mathematical data with which can be familiar. Incidentally, he is critical of tain findings as to the causation of decerebrate dity, and claims that his experiments are not in mony with the teaching of Rademaker and ers of the Magnus school. The monograph does lend itself readily to summarisation, in view of peculiarly technical character. Possibly its chief blem is that concerned with the quick phase of tagmus; the author's experiments lead to the w that for the occurrence of this phenomenon the stantia reticularis of the pons must be intact and t its neurones must be in relation with the central nuclei of the labyrinthine system. He considers that both quick and slow components result from peripheral labyrinthine excitations, not, however, corresponding to separate end-organs; on the contrary, his opinion is that a peripheral stimulus starts a diphasic reflex from a given semicircular canal, comparable to the awakening of the scratch-reflex in the spinal animal by a single cutaneous impression.

CLINICAL GYNÆCOLOGY AND OBSTETRICS.

A Handbook of Clinical Gynecology and Obstetrics. By R. T. LA VAKE, A.B., M.D., F.A.C.S., Assistant Professor, Obstetrics and Gynecology, University of Minnesota. London: Henry Kimpton. 1928. Pp. 281. 18*s*.

IT is difficult to place this book into any definite category. It is not a systematic text-book, nor does it treat any definite part or aspect of gynæcology. The writer's object seems to be the correction of the perspective of the practitioner or student who has made a thorough study of encyclopædic text-books and is left "in a daze of countless facts and details arranged according to the demands of logical and complete exposition rather than according to practical importance." Granting that there is a class suffering from the consequences of encyclopædic study, the need for a corrective becomes obvious, and probably this book will serve as well as any other.

The book, then, is a medley of the author's teaching on those points of gynæcology and obstetrics—chiefly the latter—which he considers of clinical moment and on which he feels he has something to impart. Orderly arrangement is entirely absent. Part I. begins with gynæcological examination and diagnosis, and a chat on displacements follows; a diversion then occurs to pelvimetry and obstetrical diagnosis, and post-partum examination, after which we are switched back to gynæcological conditions considered on a pathological basis. Part II. is almost wholly obstetrical, the subjects apparently being taken in the order of their prominence in the maternal mortality list. It begins with sepsis, toxæmia of pregnancy, and hæmorrhage, after which follow obstetric operations, malpresentations, repair of birth injuries, post-partum care, and alleviation of pain in labour.

Much of the matter is excellent and the work throughout is eminently clinical and practical; the modification of treatment to meet the particular patient is emphasised. The book will interest and instruct those who are in the mood to browse here and there as their inclination may direct.

JOURNALS.

BRITISH JOURNAL OF CHILDREN'S DISEASES. Vol. XXV. July–September.—Dr. A. P. Cawadias contributes a paper on treatment of chronic polymicrobian colitis in children, in which he maintains that better therapeutic results would be obtained if the pathology of the disease were taken into account and a more thorough clinical diagnosis was made, especially as regards what Tendeloo calls the "constellation" of ætiological factors of the disease.—Dr. F. Parkes Weber records a case of temporary pulmonary œdema in a leukæmic child during a stage somewhat resembling aplastic anæmia. The patient was a boy, aged 14, suffering from lymphatic leukæmia of the undifferentiated cell type, in whom acute pulmonary œdema followed blood transfusion.—Dr. Hazel H. Chodak Gregory reports a case of splenectomy for purpura hæmorrhagica in a boy aged 7 years. When seen ten months after the operation he was in good condition. The spleen, which was enlarged and weighed 2¼ oz., was connected by dense adhesions with the anterior abdominal wall, which suggested some primary inflammatory lesion of the spleen and its covering peritoneum as a possible cause of the disease.—Dr. J. D. Rolleston describes a case of non-surgical subcutaneous emphysema in laryngeal diphtheria. The patient was a girl, aged

6 years, suffering from severe faucial and laryngeal diphtheria, who developed subcutaneous emphysema of the neck, face, and chest. Considerable relief followed tracheotomy, and recovery ultimately took place, though the emphysema lasted for 11 days. Rolleston could find only six other examples, a record of emphysema in laryngeal diphtheria apart from tracheotomy or intubation. The condition is probably due to the fact that, as the result of dyspnœa, pulmonary emphysema occurs, vesicles on the surface of the lung rupture, and air passes to the root of the lung and so to the mediastinum and neck.—Dr. Helen Mackay records a case of diabetic coma with subcutaneous emphysema in a boy aged 4 years. The emphysema appeared after about 30 hours' air-hunger and spread over the neck and upper part of the thorax. Recovery took place under insulin treatment.—In a paper on uræmic paralysis following scarlet fever, Dr. M. Shaw, who reports a case of his own, illustrates the rarity of cerebral palsy following scarlet fever by the fact that Rolleston could find only 75 cases on record up to 1927, including four which had come under his own observation. Shaw's case occurred in a boy aged 4 years who, in the fourth week of a mild attack of scarlet fever, developed nephritis followed by symptoms of uræmia and left hemiplegia. The child survived, but the paralysis persisted.—Dr. T. R. Aynsley records two cases of hemiplegia associated with extensive nævus and mental defect, similar to those recently published by Brushfield and Wyatt.—The abstracts from current literature are devoted to acute infectious diseases.

MEDICINE AND THE LAW.

An Unregistered Dentist.

THE point in a case which came before the Chichester magistrates on Sept. 11th was whether the extraction of a tooth for a friend by an unregistered man constituted the practice of dentistry. Suffering great pain from toothache all night, a man named Pace went to his friend, Lewis Llewellyn, in the early hours of the morning on July 29th. Knowing that all the dentists were closed at that time of the day, Llewellyn extracted a tooth, and in endeavouring to extract another the tooth broke. Llewellyn was not in possession of the correct instruments, and he advised Pace to go to the hospital. From there he was sent to a qualified and registered dentist, and the remains of the broken tooth were extracted. The Dental Board of the United Kingdom took the case up, and Llewellyn was summoned for practising dentistry without being registered under the Dentists Act. Up to 1921 Llewellyn had been engaged in dental practice on his own account in Swindon. He did not register as a dentist when the Act of 1921 became operative, as he was then under 23 years of age; and he told the court that since the Act he had extracted only one tooth—that of Mr. Pace. The magistrates found that a technical offence had been committed, but they recognised that Pace went to his friend in great pain, and Llewellyn made no attempt to evade the law, but simply tried to help his friend. Furthermore, Llewellyn, when he found he could not do all he wanted to do, sent his friend to a dentist. The magistrates dismissed the case, ordering each side to pay its own costs. The mayor cautioned Llewellyn, telling him to be wiser in the future in regard to such matters. At the outset of the case a request was made that the mayor, Dr. A. H. Bostock, the presiding magistrate, should not sit on the bench, as the Act of 1921 was passed largely through the instrumentality of the medical profession, but after consultation Dr. Bostock intimated that it was the opinion of his colleagues on the bench that it would be quite fair for him to remain there.

Coroner and Jury's Courage.

The newly appointed coroner for East Sussex, Dr. E. F. Hoare, had something to say at an inquest at Chailey on Sept. 18th on the habit of juries coupli with their verdict of suicide the words, "while unsound mind." In this case the inquest was on man aged 43. The widow stated that her husba had often threatened suicide and worried a good d when he was out of work. About a month ago s found a tin of rat poison in his bag, and fearing th he might use this poison on himself she asked a neph to bury it in the garden and this was done. T man bought an ounce of prussic acid and signed t poison book, saying that he required the acid killing wasps. Later he was found under a hed on his allotment, the cause of death being cyani poisoning. At autopsy the condition of his visce appeared to be perfectly healthy, and there w nothing in the state of the body to suggest a moti for the act. Summing up, Dr. Hoare made t following comment: "The point is, is there anyo who saw the man take the prussic acid? I was prese at the post-mortem examination and the body w full of cyanide poisoning. The fact that it was fou on his body and in his stomach points to the fa that he took it himself. The other question to co sider is in regard to the state of his mind at the tim This is not very clear. His wife states that he h talked about committing suicide and thought he w likely to do it. Before you return your verd I would like you to realise that the mere fact that person commits suicide does not mean you have g to say he was of unsound mind. Juries are rath apt to do that. You must be convinced there is so evidence of unsound mental balance before the a was actually committed." After a short considerati the jury announced a unanimous verdict of "Suicid only, to which the coroner replied: "I think you a perfectly right. One must have evidence of defin mental trouble before insanity is mentioned. I a very glad you had the courage to stick to yo verdict. Unless you have evidence you must n assume. I congratulate you on the courage y have shown."

Dangerous Drugs Acts: a Doctor Prosecute.

It is a legal maxim that nobody is allowed to excu himself by pleading ignorance of the law. In certa cases, indeed, the courts may expect special knowled of the law. For instance, a medical practition would presumably be expected to know more abo the Dangerous Drugs Acts and Regulations than shoemaker or a plumber. At a recent prosecuti at the Tower Bridge Police-court (on a charge having failed to enter in a register the particula of the purchase of certain quantities of morphi sulphate on certain dates) it was somewhat unfo tunately urged on behalf of the defendant doct that the practice of the medical profession w extremely lax in these matters, and that the defenda did not realise what the regulations implied. Th kind of plea, which the magistrate entirely declin to accept, does no service to the medical professi as a whole, since existing arrangements for t enforcement of the law are based upon the loy coöperation of the members of that profession. N did it assist the particular defendant since, at later stage of the proceedings, statements were ma by the prosecution which appear to have establish something more than mere laxness. A representati of the Director of Public Prosecutions informed t court that the defendant had been convicted earli this year as a drug addict. A detective-inspect mentioned a previous charge in April last of steali 100 tablets of morphine sulphate. It was stat that last June the defendant was sent to a hon until he could be certified as cured, and that he ha been released under the Probation of Offenders Ac Fortunately the magistrate found a lenient cour possible. On the defendant's partner undertaki to look after him, the defendant was remanded f three months on his own and one other surety £50 each. This should mean that, if there is further infringement of the law, there will be further punishment.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 29, 1928.

RHEUMATIC HEART DISEASE IN CHILDHOOD.

RHEUMATIC carditis is now recognised as a crippling and fatal disease, of which the complete cure is so rarely achieved that efforts are being centred chiefly on its prevention. In his Lettsomian lectures, the last of which we publish to-day, Dr. F. J. POYNTON makes a weighty contribution to this campaign. He has much to say that will encourage all who are working at the rheumatic problems of childhood, but at the same time he leaves a sobering impression that though the subject has been intensively studied for many years, the gaps in our knowledge are still so wide and formidable as to hinder forward progress. As regards the predisposing causes of the disease, he believes strongly in a hereditary factor and in a nervous element, but also that there may be other causes, endocrinological and dietetic, which have not yet been sufficiently explored. His attitude towards tonsillectomy is hesitant rather than sceptical. "It seems clear," he says, "that the tonsils must destroy infection, but the difficulty is to ascertain when they cease to act as a protection and become a danger." Evidence upon the occurrence of first attacks of rheumatism in children who have already had the tonsils enucleated is being accumulated on a large scale, and its publication is anxiously awaited by Dr. POYNTON, since the standardisation of current practice must depend on the frequency with which such attacks occur. The influence of damp is less to be feared, in Dr. POYNTON'S experience, than that of sudden atmospheric change; in large towns dry weather is held to predispose to dust-formation and sore-throats, and so to rheumatic infection. Dr. POYNTON deprecates the exhibition of salicylate of soda in large doses to frail rheumatic children; in his hands, solysin, a cinchonic acid preparation, has proved an important addition to the scanty number of drugs which influence the rheumatic infection and is not toxic. The results of "sanatorium" treatment given in the home for heart cases in Sussex, recently transferred to West Wickham, are encouraging. The late effects of prolonged convalescence in this home correspond with those published recently by the Ministry of Health [1]—about two-thirds of the cases investigated after return to their homes were found to have maintained the improvement in their condition.

One of the most difficult problems for the clinician is to know when an attack of rheumatic carditis is over, that is, when the healing of the necrotic areas in the connective tissue of the myocardium is complete. Since it is extremely rare for death to take place during the earliest phases of the illness, pathological material for the study of this problem in prognosis is scanty. One has only to imagine the picture of early tissue-necrosis and attempted healing going on side by side, as caseation and fibrosis go on side by side in the tuberculous lung, to realise the difficulty of estimating the stage of the disease in the living subject. Add to this the uncertainty as to the method of primary invasion of the body by the infective agent, and the outcome is that we know depressingly little about the pathology of the condition. Dr. POYNTON tells us that 25 years ago Dr. ALEXANDER PAINE, his co-worker, and himself prophesied that the great battle of causation would be fought not over acute rheumatism but over malignant endocarditis, and he still holds that malignant endocarditis will prove the key to the situation. In this affection there can only be the two alternatives, either the rheumatic infective agent develops a great virulence and overwhelms the defences, or it has prepared the way for other infections. Dr. POYNTON, holding as he does that a streptococcus is the cause of acute rheumatism, naturally sponsors the former view, and, arguing from actual cases where micrococci have been obtained from patients with rheumatic carditis, states that the important question for the future treatment of heart disease is whether or not there is a malignant type of rheumatic endocarditis. If there is, the cause of acute rheumatism is known at once, but if not, how, he asks, are we to explain the frequent association of streptococci with rheumatic lesions? Against the theory of a secondary infection he claims that though the septic infections of childhood, such as tonsillitis and otitis, should give ample opportunity for attack on damaged valves, yet malignant endocarditis is exceptional in the child. Incidentally he notes that after attempts over a period of 20 years to treat rheumatic heart disease by vaccines or sera he has never succeeded in obtaining results good enough to justify any clear statement, and in malignant endocarditis his experience of vaccines has been "one uniform record of complete failure in both child and adult, used early or late, in combination with sera or separately, autogenous or stock, simple or complex."

Dr. POYNTON considers the pathological lesion in mitral stenosis to be of a different type from the ordinary rheumatic tissue-necrosis and tissue-repair, in that the process of fibrosis is slower and more subacute. Since this lesion is by far the most serious valvular lesion resulting from cardiac rheumatism, by reason of the actual obstruction it presents to the circulation and also of its close association with auricular fibrillation in later life, it is satisfactory to find the process of its evolution considered as a separate subject. If the development of mitral stenosis in the young could be by any means prevented, the late results of rheumatic disease would be less terrifying. Dr. POYNTON emphasises the significance of dilatation as the earliest sign of cardiac disease, and like the late Dr. D. B. LEES, the importance of the light form of percussion. He values electrocardiographic methods and considers that disturbances in rhythm are probably the result of focal lesions in the connective tissue framework of the heart in the region of the bundle of His. This attitude is in direct opposition to the views of the late Sir J. MACKENZIE on the youthful types of irregularity, extrasystole, and sinus arrhythmia. The presence of sinus arrhythmia, acccording to Dr. POYNTON'S school, does not signify that the heart has escaped infection. This is fortunate if there is any truth in the view held by some that a return of the respiratory variation in the heart-rate signifies a quiescence of cardiac infection in the rheumatic heart.

[1] Reports on Public Health and Medical Subjects No. 44.

MODERN PROBLEMS IN NEUROLOGY.

ENGLISH neurologists are little given to the writing of systematic books, but on rare occasions we are able to welcome collections of papers by them issued in book form. To Dr. S. A. KINNIER WILSON we are now indebted for a group of selected contributions on the neurological problems which have particularly engaged his attention in the last few years. The first third of the book [1] is devoted to the problem of epilepsy—or "The Epilepsies," as Dr. WILSON prefers to say; the second to the problem with which the writer's name is particularly associated, that of the diseases of the corpus striatum; and among the remaining chapters we find one devoted to a third great problem, the nature of certain disorders of sensation. The problems of epilepsy, using the word in its widest sense, have of late years been engaging the concentrated attention of English specialists, and their activity has frequently been reflected in our own columns; among their more noteworthy contributions Dr. JAMES COLLIER'S recent Lumleian lectures [2] and Dr. GORDON HOLMES'S Savill Memorial oration [3] rise to our minds. The English school of neurology has behind it the greatest contribution ever made to the knowledge of this subject, HUGHLINGS JACKSON'S discoveries and teaching in regard to the forms of attack which have since borne his name, and Dr. WILSON reverts frequently to HUGHLINGS JACKSON as to the fons et origo of all modern knowledge in this department. In the articles now reprinted his own analytical mind has concerned itself chiefly with the most basal problems of the subject—what constitutes a fit? the type of movement in a general fit, the numerous variants of epileptic attacks, the inhibitory elements which form part of every attack and seem to form the whole of certain attacks, and the essential unity with epilepsy of the peculiar symptom called narcolepsy.

Of the chapters referring to diseases of the corpus striatum the keynote is restraint. Since Dr. WILSON gave the original description of the syndrome of the corpus striatum in 1912 there has been a widespread tendency to add to the syndrome and very varied disturbances of movement and of speech and writing have been attributed to disorders of one or other part of the basal ganglia. But these ganglia are of simple structure and therefore most unlikely to have multiplex functions. Critical judgment and experimental methods applied to some of these symptoms show that it is unjustifiable to ascribe them to striatal dysfunction, and the narrow limits which Dr. WILSON still sets to the functions of the corpus striatum will, we imagine, surprise many of his colleagues abroad. "The main features of disease of the corpus striatum consist of disorder of muscle-tone regulation, and appearance of involuntary movements." "Disease of the strio-spinal system . . . allows rigidity and hyperkinesis." The author, who speaks with authority in this department, sees no reason to add to these.

The third great problem in neurology which this stimulating book raises is that of the nature of certain subjective sensory disorders associated with organic lesions. In the chapter entitled "Dysæsthesiæ and their Neural Correlates" (the title smells of brimstone and the black art!) the philosopher in the neurologist is at his best. "Dysæsthesiæ" includes all subjective disorders of sensation, such as "burning," "tingling," "deadness," which seem to arise spontaneously. After a brief preliminary discussion, including a short consideration of the nature of pain, the dysæsthesiæ associated with lesions at the various neural levels are described. Since these abnormalities are conscious sensations the afferent paths from the sites of the lesions to the "perceiving cortex" must be open and the latter must be intact. Their pathogenesis may be attributed either to stimulation and excitation at the site of the lesion—in many ways the simplest theory, or to the withdrawal of the influence of a postulated inhibitory sensory system—a view which presents many theoretical difficulties as yet, but to which further evidence may bring more support. Another pathogenic factor may be lesions either of the sympathetic nervous system or of the vascular system. Cases of peri-arterial sympathectomy furnish evidence pointing to the modification of certain sensory disorders by operation on arterial nerve-plexuses. Thus under certain circumstances a neural origin, under others a vascular or sympathico-vascular origin underlies the manifestation of dysæsthesiæ in consciousness.

The presentation of these papers in permanent and accessible form is the more fitting inasmuch as the writer possesses, in a degree uncommon among medical authors of our time, a gift for putting his contributions into literary shape.

[1] Modern Problems in Neurology. London: Edward Arnold and Co. Pp. 364, with 56 illustrations. 21s.
[2] THE LANCET, 1928, i., 587, 642, 687. [3] Ibid., 1927, i., 957.

THE COMMON COLD.

EVERYONE has had, is having, or shortly will have a common cold, and, if we follow the advice of Prof. LOVATT EVANS given at the recent meeting of the British Association, we shall not seek to know why it is so—that, he says, is the province of the philosopher; what we want is a brief statement of the way of a cold, and this, in spite of almost universal personal experience, is what we lack. The natural history of diseases which strike occasionally and disappear for a time has in many cases been worked out with care. The common cold is so swift and prolific that, like the drosophila for problems in genetics, it might well serve as the type object of epidemiological research. The new conception of epidemic genesis recently set out by Dr. C. A. GILL, director of public health for the Punjab, in a book reviewed on another page, may stimulate inquiry into the way of a cold, for the gist of what he calls the quantum theory is that all epidemic manifestations are essentially dependent upon loss of equilibrium between infection and immunity—upon what LOVATT EVANS would call maladaptation. And GILL'S theory is all the more applicable to the common cold, for he attributes great prominence in the genesis of epidemics to meteorological conditions. During their passage from one human host to another, he writes, parasites are exposed directly or indirectly to the influence of meteorological conditions, a factor which may well be potent, even though the host as well as the parasite is susceptible to atmospheric changes. We are, as it happens, in possession of some recent information as to the extent to which disturbance of the body heat may be considered as the primary cause of commensal infection. The inquiry is by Dr. J. J. VAN LOGHEM, professor of hygiene in the University of Amsterdam, who has made a special study [1] of the borderline between parasitism and commensalism, the commensal organism being one that lives on the surface of the skin and mucous membranes and only causes disease under special circumstances which weaken the physiological defences. There are previous data bearing on the point. GREENWOOD and YOUNG in this country have found temperature to be the meteorological

[1] Journal of Hygiene, vol. xxviii., No. 1.

factor most closely associated with the mortality from respiratory disease. Dr. VAN LOGHEM also quotes an analogous result from a study by SCHADE of the German Army in time of peace which showed a parallelism in the rise and fall of "disease through cold" (affections of the skin in consequence of freezing), and of respiratory diseases. The direct research into the minor respiratory diseases conducted by the Public Health Service of the United States has also shown the synchronous occurrence of these diseases in various parts of North America.

Dr. VAN LOGHEM'S own research in Holland lasted 37 weeks and the final data covered 6933 persons. His informants were mainly heads of families of the more intellectual classes. A weekly list of questions demanded for each member of the family simply a no (no new cold) or yes (caught cold), and in case of colds the further statement—nose cold, sore-throat (angina), hoarseness (laryngitis), cold with cough (bronchitis), or slight influenza. No inquiry was made about serious diseases. The weekly percentages of colds in seven geographical groups showed a roughly similar course as regards major variations, and this similarity became more evident when the data were put into two groups only—Amsterdam and the rest of Holland. Roughly the same course (with the exception of a high initial September peak in the colds) was found in the ten-daily average of the outdoor temperature, inverted so that the peaks were peaks of cold. This disparity the author explains by the fact that the nights were then very cold—a fact marked in the averages by the warmth of the days, thus indicating that not only a general drop but also a large variation in temperature in the 24 hours may go hand-in-hand with colds. Weekly deaths from pneumonia for the Netherlands also showed a course following roughly—though with a lag—the course of both the temperature and the "colds incidence" line, agreeing with the former more closely than the latter especially in the absence of the high September peak, but differing from both in having a very sharp rise in March and April. Mortality from "old age" in the Netherlands for the same period showed a similar parallelism with outdoor temperature, but unlike pneumonia had no March-April rise. The specific cause underlying this peak in the pneumonia deaths, however, was suggested by a corresponding peak in the influenza deaths for Holland. Of the five types of colds classified in the colds inquiry, coryza largely outweighed all the rest, the courses of coryza and bronchitis were almost exactly parallel, angina and laryngitis showed the same tendency but on a smaller scale. Influenza at first followed the colds and then took its own course, having its highest peak much later in the period, corresponding to the late peak noted in the mortality for the country both from influenza and pneumonia. From these results Dr. VAN LOGHEM concludes that during the period there were two important causes of pneumonia—disturbed thermo-regulation, more potent in the first part of the period, and influenza, more potent in the second. He thus places influenza in a different category from diseases resultant on catching cold or commensal infections such as cold, pneumonia (in part), and old age mortality, and describes it as "a parasitic infection which in a period of catching cold easily gets entangled with pneumonia." He concludes that an important part of the respiratory diseases is based on infection by commensal microbes which occurs after the physiological defences have been weakened by a disturbance of thermo-regulation, and that commensal infection may thus lead to parasitic infection to which healthy persons may fall victims by contagion. Dr. VAN LOGHEM then sought from his data evidence as to the contagiousness of colds. He argued that if colds were contagious small families should have a lower incidence than large families. On dividing his families into two groups according to size, he found the difference in incidence negligible. This part of his analysis carries less weight, for the average difference in family size is small, and might even with fairly high contagiousness be outweighed by opportunities for infection outside the family. Families even where there are small children are not isolated units, and contact with the outside world is generally too close for us to do more than agree with the author's first comment that nothing has been proved by this of the contagiousness of colds. To test the disturbance of the heat-regulating powers of the body by outside cooling Dr. VAN LOGHEM obtained the rectal temperature of 33 children at 3.30 A.M. and 4.30 P.M. for 26 days, and found some conformity between the former and the open-air temperature at midnight—not a very striking correlation if we are right in estimating it from the published graph at $0{\cdot}19 \pm 0{\cdot}13$.

There is room for much more work on the lines of this study. His subjects had an average of over four colds per person in the 37 weeks—a frequency which, as we have said, makes it a hopeful subject for investigation. Such observations might be increased both in scope and in detail. Dr. VAN LOGHEM'S views on the active and passive means of keeping up the body-heat level may be a little one-sided. The observed facts can tell us of the association of environmental factors such as temperature with the incidence of disease, but assuming a real basis of causation in this association, the manner of its working is not self-evident. The paradox that cold may work inversely by means of heat needs some consideration, and there is nothing in the Netherland results to contradict the conclusion to which the work of LEONARD HILL leads, that cold weather may bring about a large crop of colds through people being more inclined to shut themselves up in warm stuffy rooms and to open fewer windows.

A COURSE will, as usual, be held at St. Mary's Hospital, London, during the week-end preceding the autumn session. The meetings will be in the library of the medical school and will be open to all medical practitioners without fee. They begin on Saturday, Oct. 6th, at 11 A.M., with a lecture by Dr. Reginald Miller on the Intestinal Child, after which Sir William Willcox will speak on Food Poisoning and Paratyphoid Infections (noon), Dr. A. Hope Gosse on Prognosis in Heart Disease (2.15 P.M.), and Mr. R. M. Handfield-Jones on Recent Advances in Everyday Surgery (3.15 P.M.). On Sunday the first lecture will be at 10.15 A.M. when Mr. Aleck Bourne will speak on the New Ovarian Hormones, followed at 11 A.M. by Dr. C. M. Wilson on Some Common Difficulties in Diagnosis, and at noon by Mr. Zachary Cope with a demonstration of clinical cases and pathological specimens. On Sunday afternoon there will be no lectures, but the course will be continued throughout Monday, Oct. 8th, Mr. Duncan Fitzwilliams starting at 11 A.M. with an account of the Use of Radium in Malignant Disease. Prof. C. A. Pannett will lecture, at noon, on Some Surgical Obsessions and Dr. John Ryle at 2.15 P.M. on the Nature and Relief of Some Common Gastric Symptoms. Mr. T. G. Stevens will conclude the series with an address, at 3.15 P.M., on Some Pitfalls in Obstetrics. Those who have attended former courses of this kind will need no recommendation to attend. The popularity of the lectures is a welcome indication of the need felt by practitioners to keep their knowledge up to date.

Annotations.

"Ne quid nimis."

WOMEN IN MEDICINE.

WHILE London University is considering the facilities provided in the London schools of medicine for the education of men and women students respectively, various women's organisations have set up a joint committee to promote equal opportunities for women with men in the medical and hospital services. The latter have now issued a leaflet setting out the facts as seen by them regarding (1) the training of women medical students in London, (2) equal opportunities of hospital appointments, and (3) women on hospital boards of management. It was of course during the war years, 1914–18, that women came into their own in the opportunities for making a medical career. For a time seven of the 12 medical schools of the University of London were co-educational and some of them apparently intended to remain so. This high tide has ebbed as might have been prophesied, and the periodicity of its flow is difficult to determine. There is a perhaps not unnatural tendency to regard the situation as having settled down, like the price of houses and the ratio of unemployment, to what may be regarded as normal conditions. But probably in all three respects it is too early to speak of a norm at all, although the entries of medical students of both sexes are not unlikely to fluctuate fairly close to the standard of 500 each for England and Scotland and 200 for Ireland. The women's memorandum, however, envisages a general tendency towards a steady increase in the demands for the services of medical women as time goes on. First and foremost, there is an increased demand for women to fill posts in child welfare and maternity clinics, school inspection, and the like, under local authorities. There is the probability—the memorandum regards it as a practical certainty—that within a few years national health insurance will be extended to cover dependent wives and children, or, if not, a health service covering these classes will be set up, and in either case there will be greater need for the advice of women doctors. Apart from these special occasions, the memorandum speaks of a steadily growing demand for women doctors spreading from the more to the less educated women as the latter begin to realise the possibility of employing doctors of their own sex. It is suggested that women are still often deterred by scruples of delicacy from submitting themselves to medical examination by a male practitioner until the time has gone by for the recognition of such serious diseases as cancer. The growth of population in and around London, and the increased demand for doctors in India and the Far East, are also regarded as likely to augment women's entry to the medical profession. Finally, there is the economic reason, very frankly stated in the memorandum, that the financial condition of the professional classes at the present time makes it especially desirable for them to seek careers for their daughters; and where should a more suitable career be found than in medicine? These are the reasons why, in the opinion of an influential body of women's organisations, the growing need of facilities for the medical education of women in London should not be overlooked.

OSSIFICATION.

FOR generations the problems of calcification and ossification have been the subject of inquiries and research. Anatomists, embryologists, physiologists, pathologists, and chemists have contributed views on some one or more of the questions concerned, and certain facts have emerged from the theories and fancies to gain general acceptance. It is usually held that calcification precedes ossification, whether cartilaginous preformation is present or not, and that the calcified area is destroyed in the course of the osteogenetic process. Osteoblasts and osteoclasts have also been in the picture for many years, the former being concerned in some way with the deposit of the bony material, while the large, usually multinucleated cells known as osteoclasts are held responsible for the removal of bone where necessary. It must be admitted that the powers claimed for these cellular bodies are not based on incontrovertible evidence, and some observers have not hesitated to deny them. For example, Drs. R. Leriche and A. Policard, who, after some ten years of research in collaboration, have produced their results in a book [1] which does not seem to have attracted the attention it merits, attempt to discredit the osteoblast and belittle the osteoclast. These authors have arrived at many conclusions which are not in accordance with commonly accepted ideas. For example, in discussing the preliminary stages of ossification, they suggest that the physiological value of the connective tissue basis of bone is in inverse ratio to its histological differentiation. The higher the degree of complexity of the pre-osseous framework the less dense is the bone formed. To illustrate this thesis, bone is aptly compared with reinforced concrete, the steel skeleton representing the connective tissue fibrils, while the cement corresponds to the calcified matter. They believe that there is no relation between osteogenesis and the presence of osteoblasts, which are held to be osteolytic elements, albeit of a feeble power. Their appearance is held to be a reaction on the part of the cellular elements to the pre-osseous changes occurring in their midst. The osteoclast is not, according to these workers, a cell of specific origin; it may arise from fibroblasts, osteoblasts, or endothelial cells. Its action is phagocytic; osteoclasts have been observed in the process of enclosing fine spicules of bone in areas where absorption is taking place. The view expressed by Kölliker that osteoclasts may change into osteoblasts finds no favour; disintegration and disappearance of these elements seems to Leriche and Policard to be a more likely fate. The resorption of bone is not, according to these observations, a cellular phenomenon, and the rôle of the osteoclast may be of minor significance. The process of halisteresis is considered from a biochemical aspect. As to the periosteum, Leriche and Policard range themselves with Macewen in holding that it does not possess any specific osteogenic function. It limits bone growth, but also by virtue of its proximity to the bone-forming elements it favours ossification. The authors describe an ingenious method of experimental production of bone in the skin in man, and discuss the mode of formation of bone in unusual regions. Finally, an attempt to apply to pathology and surgery the general laws of ossification is stimulating and suggestive. Nevertheless the work is not altogether convincing. Especially in regard to the osteoblasts and osteoclasts it is difficult to accept their conclusions. Most embryologists will hold that the status of osteoblasts and osteoclasts remains more or less unimpaired. The older view of the preliminary calcification, that it was a deposit of lime salts in a non-living or extra-cellular tissue or medium, an inter-cellular substance, has now given way to the better founded conception of the exoplasm, an outlying part of a cell, in which the deposit takes place. It is in this material that fibrils make their appearance before calcification; fibrillation, due probably to the linear arrangement of cytoplasmic granules with a covering of adsorbed colloidal material, is a function of living protoplasm. Calcification, then, occurs during the life of the area involved, but it is nevertheless a sign that this life is at a very low ebb. Ossification, on the other hand, is an indication of exuberant life, a sequence of new circulatory invasion, entailing of necessity the clearing away of the calcified debris which preceded its advent. Embryological examination shows very clearly this

[1] Les Problèmes de la physiologie normale et pathologique de l'os. Paris: Masson et Cie.

association of ossific centres with vascularity, and the way they destroy and replace the practically non-vascular calcified area. These matters were well brought out in THE LANCET of Sept. 8th by Prof. H. A. Harris writing on Bone Formation and the Osteoblast. Readers interested in the questions from a pathological or morphological standpoint will find this paper of considerable reference value. Dr. Harris says truly that we wait for the chemist to explain the colloidal processes which lead to the deposition of calcium in two tissues so fundamentally distinct as dying cartilage and living bone. It does not seem that the anatomist and the embryologist can advance much further without some widening of the horizon. The modern view of living substance compares it with a reversible colloid, and researches along the lines indicated by such a comparison, researches dealing with suspensions and emulsions and the effects on them of various salts, will without doubt open up new avenues along which the investigator of ossification will be able to progress. There will still remain a vital activity (in the form of cellular regulating processes) which will be outside the chemist's province, and it is in the elucidation of this process that the opportunity of the experimental embryologist will come.

CHILD WELFARE IN JAPAN.

WRITING from the laboratory of the University medical clinic at Kyoto, Dr. Teruko Minouchi describes[1] the development of infant and child welfare in Japan. She points out that the changes which have taken place in this country within the last 60 years, while they represent an enormous advance in energy and culture, seriously threaten the health of the people in several directions. A special feature in the industrial life of Japan is the greatly increased ratio of female to male workers, especially in the case of the textile trades which form the most important industry of the country. The ill-health of the women is increased by the fact that the girls begin to work while very young and undeveloped. The author briefly sketches the growth of infant welfare in Japan from its earliest beginning 1400 years ago down to the present day. In spite of this long period, however, the infant death-rate in Japan in 1924 was more than twice that of England and Wales, and three times that of the Netherlands. Dr. Minouchi is convinced that progress in maternity and child welfare will depend largely upon the development of the women's movement, and she urges that women should take a larger share in public life and in the general activity of the nation if any progress is to be made in social hygiene. Dr. Minouchi's paper was presented to the open meeting of the Medical Women's International Association recently held at Bologna.

CONTROL OF INVALIDITY.

NATIONAL attention is being ever more and more directed to the importance of invalidity, to the economic loss it entails through national insurance, and to the industrial inefficiency thereby created. Few investigations have thrown more light on the causes underlying sickness, whether due to illness or accident, than one made among coal-miners by Dr. H. M. Vernon and Dr. T. Bedford.[2] Nevertheless, the subject is difficult; and, although records were studied relating to 23,000 miners for periods of 21 months to six years, and although the authors can point to the extraordinary sensitiveness of the miner to his conditions of work and general environment, yet the inferences suggested by the facts are only cautiously advanced. Some deductions seem definite. The most valuable method of reducing absenteeism which among coal-miners is considerable is to improve the conditions of work; thus air movement within a narrow range is associated with a minimum of accidents and sickness, and at moderate variations to lower or higher velocities the rates rapidly rose. Air velocities of only 18 to 21 feet per minute were found, and are condemned as too low for efficient work or for safety in mines rich in gas. The cause of absenteeism most studied was accident, the frequency of which, so far as minor accidents are concerned, varies with underground temperature. The grading is remarkable; accidents causing less than ten days' disablement were 4·3 times more numerous at the highest than at the lowest temperatures; those causing 10–19 days' disablement were 2·0 times more numerous; those causing 20–59 days' disablement were 1·5 more numerous; but major accidents causing 60 days or more disablement were unaffected by temperature. Generally what holds good for accident frequency also holds good for sickness rates. Undue exercise increased absenteeism; men who walked from the pit shaft to the coal face, 2800 yards, showed 58 per cent. more than men who walked 1330 yards; similarly, men who lived 2–6 miles from their colliery showed 80 per cent. more voluntary absenteeism than those living 1–2 miles away. Seasonal fluctuations naturally affected surface workers more than underground men. The outstanding conclusion to be drawn is the delicate way in which the human organism reacts to its environment; by controlling the environment its reactions can be advantageously controlled whether the reaction result in a traumatic or infectious "accident."

THE CEREBRO-SPINAL FLUID IN SYPHILIS.

WRITING on the cytology of the cerebro-spinal fluid in syphilis, Paul Ravaut and Raoul Boulin[1] say that dried fixed films made after centrifugation leave such a large proportion of the cells disorganised as to be valueless, whilst a simple numerical count may give no hint of a serious underlying pathological process, persisting after the cell count has almost reached normal figures. After many trials they favour vital staining with methyl-green pyronine, the deposit after centrifugation being mixed with the stain and the cover-slip ringed. Such a preparation lasts about 24 hours. Living cells may be distinguished by the fact that they take longer to stain, sometimes even hours, the nucleus eventually becoming blue and the cytoplasm and nucleolus red or rose-coloured. As a result it is claimed that the following types of cell may be distinguished: unattached nuclei, lymphocytes, medium-sized mononuclears, polymorphonuclears, large mononuclears, and plasma cells. The two last types are always of great importance as indicating involvement of the parenchyma of the nervous system, as opposed to meningitis. In secondary syphilis, a count composed of lymphocytes and medium-sized mononuclears gives a favourable prognosis under treatment; but if large mononuclear cells and plasma cells are also present, they may persist in spite of treatment, giving warning, perhaps years ahead, of involvement of the nervous system. Tertiary cases they divide into four groups: those with no clinical involvement of the nervous system, those in which only the cerebral vessels are affected, tabetics and cases of general paralysis. In the first two groups the same rules apply as in secondary syphilis, but the significance of an abnormal fluid is greater. In an early tabes lymphocytes and middle-sized mononuclears often predominate with perhaps a few small plasma cells, or the latter may form the majority. An old or arrested case may show very few cells, most of them dead, and polymorphonuclears are rare. It is often impossible to tell a progressive from an arrested case by the cells present because, though quiescent in the meninges, the disease may be active in the parenchyma.

[1] Die medizinischen Massnahmen zur Gesundsheitsfürsorge für Kinder, insbesondere Säugling und Kleinkind, und für Jugendliche in Japan.

[2] A Study of Absenteeism in a Group of Ten Collieries. By H. M. Vernon and T. Bedford. Industrial Fatigue Research Board. Ref. No. 51. H.M. Stationery Office. 2s. 8d.

[1] Presse Méd., July 14th. This paper summarises one appearing in the Annales de Dermatologie et Syphilographie for last December.

General paralysis has more definite characteristics. The cells often show great vitality and diversity of type and it is only in these cases that the large and polynuclear plasma cells are found. Lymphocytes and medium-sized mononuclears still, however, often form the majority of the cells present. Ravaut and Boulin claim that the technique is simple, but it is clear that a considerable experience would be necessary before the different types of cells could be distinguished with certainty, the more so as moist preparations are necessary. Confirmation of the results is also clearly necessary and this can only be obtained, as the authors have found, by years of comparison with clinical findings. But the importance of the spinal fluid as a guide to prognosis in secondary syphilis is now becoming recognised; and the assistance promised by the present work should not be ignored where there is enough material at hand to allow mastery of the technical difficulties.

QUESTIONING THE PATIENT.

No one will dispute the importance of thorough physical examination before diagnosis, but the stress laid upon it tends to relegate history-taking to a second place. The main reasons for a relative neglect of this fundamental part of the examination are nervousness or incoherence on the part of the patient, a preconceived idea of the diagnosis either on his or the doctor's part, and, most important of all, lack of time. The time available for a consultation has its limits, and it can only be used to the best advantage if patient and physician are prepared to assist each other. We have just received the second edition of a little book[1] designed to meet these difficulties and prepare the patient for consultation. It opens with a short preface in which the duties of the patient to the physician are explained, and emphasises especially the need for early consultation, so that tendencies to disease may be recognised before they become incurable, and the desirability of giving an accurate account of the symptoms themselves rather than of deductions and theories. This advice is followed by lists of questions arranged under various headings such as general information, family history, nutritional and digestive disorders, and respiratory troubles, which the patient, according to his complaint, can prepare himself to answer, in order that when the actual consultation arrives nothing will be missed and answers will be clear and to the point. There is no doubt that if this book were used intelligently history-taking would be made easier and more speedy. But there are great disadvantages in putting a book of this kind in the hands of patients. The people who most need such a guide are exactly those who would be most confused by the possibility of having to answer a formidable array of questions, whilst the suggestive effect of studying queries like, "Have you a very sharp pain which starts from the region of the heart and goes towards the left arm?" might be very unfortunate. The book may be useful to the physician in re-emphasising the value of a careful history, but in the hands of patients it would certainly give rise to more mistakes than are traceable to the surreptitious leading questions which a medical man must introduce into his catechism.

MALARIA AND COMPROMISE.

THE 33 members attending a session of the First Subcommission of the Malaria Commission of the League of Nations have issued a unanimous report on antimalaria methods.[2] The final aim of all measures directed towards the eradication of malaria is regarded as being an "integral bonification," which may perhaps be defined as the sum of economic, social, and hygienic betterment induced by development of the land and growth of civilisation. But by the very process of its attainment, bonification may temporarily increase malaria, so that in the meantime antilarval and other measures must be employed. Time is the essence of the contract for this as for all general antimalarial procedures, and unless adequate time be conceded adequate results will not be obtained. Time, too, is concerned in obtaining that "minimum effective degree of perfection" which must be reached before any individual antimalarial measure produces visible results. The most important of these is the treatment of the sick; it is the primary obligation, whose good results will, however, be apparent rather in the reduction of the severity of infection than of its incidence. In the choice of other intermediate methods which shall be employed in any particular local campaign, imitation of those which have already proved their value elsewhere is actually dangerous. Quite otherwise is the imitation of the confidence, energy, and perseverance which gave them their earlier success, and of the discernment which chose those measures which have proved applicable to each particular locality. In effect, this advice from the Subcommission implies the selection of an executive officer with wide knowledge and shrewd mind, who is allowed time in which his schemes may show their value. The report also emphasises how essential is the setting apart, in every country concerned, of special research workers; for very much still remains obscure in malaria, and antimalarial measures cannot reach their full effect till that shadow is enlightened.

HOUSING IN CITIES.

DURING the coming autumn session Parliament will have to review the position of the subsidy granted out of the national exchequer in order to expedite the supply of adequate housing for the existing population. The Minister of Health, who has the Rating and Local Government Bill on his hands, will no doubt be guided mainly by the experience of the public health authorities in the large urban areas concerned. Reports from medical officers of health of three industrial cities contain comments of moment on the local housing problems.

In Birmingham the City Corporation has since 1920 built 17,682 houses, the numbers for the years 1925–6–7 being 3066, 5159, and 4007 respectively. Dr. H. P. Newsholme remarks that while this steady progress is being made in the provision of new houses, the problem of housing continues to rank as one of the most urgent and fundamental questions confronting the city. Much is being done, through sanitary inspectors and in other ways, to improve the conditions, often deplorable, of the least satisfactory houses, but there is great need for more radical treatment of a large mass of mean houses spread through various portions of the city—houses which are dismal, dilapidated, insanitary, and lacking in elementary amenities. It is not possible, says Dr. Newsholme, to measure the loss to Birmingham arising from the effects of such surroundings, not only through their adverse effect on physical welfare, but far more fundamentally through their hindrance to any real fullness of life. The problem calls all the more strongly for a solution through the contrast between this old and insanitary property and the remarkable new housing estates which have sprung up so rapidly. It is to be hoped on the one hand that the proposals of the Government for facilitating slum treatment will mature quickly, and on the other that the rehousing scheme is approaching a stage at which the problem of the slums can be systematically attacked.

In Manchester a special report on housing was submitted by Dr. R. Veitch Clark to the City Council on Sept. 30th, 1927. Dr. Clark can give no real evidence of a reduction in overcrowding although there may be a tendency in that direction, and the increased proportion of cheaper houses in the present housing schemes is likely to hasten the tendency. There is no noticeable slackening in the demand for

[1] Comment consulter? By Léon Schekter. 2nd edit. Paris: Octave Doin (Gaston Doin et Cie). 1928. Pp. 170. Fr.15.
[2] League of Nations: Health Organisation. C.H./Malaria/121. London: Constable and Co.

houses to let, and much the greatest demand is for the A type of house, probably owing to inability to pay higher rents. The report also gives an estimate that about 69 per cent. of the overcrowded families waiting for houses of the A2 and A3 type are able to pay the rents charged by the corporation. An estimate is put forward that the housing need for the relief of present overcrowding and for the normal increase of the population up to Dec. 31st, 1936, is 21,650, and that, in addition, 26,000 houses are required to meet the demolition of those now below a reasonable standard of fitness. During 1927 4461 houses were built, 2240 of which were municipal. Another estimate in the report is to the effect that about one-third of the "lodger overcrowding" is caused by single and married lodgers over 50, who are frequently in receipt of old age pensions or rental allowances from the guardians. The total of these rental allowances is put at £38,000 per annum, and it is suggested that the corporation might provide small houses in the form of flats consisting of a living room and bedroom or of a combined bed-living room for tenants of this type, and thus relieve much of the overcrowding without extra cost to the rates.

In Sheffield, according to Dr. F. E. Wynne, the amount of overcrowding continues to be deplorable and houses unfit for habitation cannot be closed, because the tenants cannot be rehoused. During 1927 five unfit houses were closed and the tenants of three small areas, comprising 173 houses, were removed to one of the housing estates. There are 4000 families on the waiting-list for municipal houses, and only a very small number of the very numerous applications of a most pathetic description received at the office can be entertained. It is impossible to prevent undesirable conditions on the corporation estates arising from subletting. During the municipal year ended March 31st, 1928, 1897 new houses were certified, of which 723 were municipal. During 1925 and 1926 the new houses numbered 2178 and 2714 respectively. The Parliamentary return shows that since the subsidy was reduced in December, 1926, the cost of erecting houses of the parlour and non-parlour type has gone down quarter by quarter, and that for the quarter ended June 30th, 1928, the average reduction in cost for both types was £82. Further, subsidised houses are going up at the rate of 10,000 a month and building is proceeding at twice the pre-war rate. Little has been done as yet in slum clearance and nothing in the way of building houses within the reach of the poorer classes of wage-earners.

These three reports, then, concur in the view that we are now only approaching the most difficult part of the housing problem. All people of goodwill will share the hope that when Parliament tackles it all parties will unite in a whole-hearted effort to cope with a national emergency.

TREATMENT OF MIGRAINE WITH ERGOTAMINE TARTRATE.

THE most plausible explanation of migraine is that it is due to spasm and subsequent dilatation of cerebral arterioles. If this theory were correct and, further, if such vascular spasm were evoked by nervous impulses reaching the cerebral vessels by the sympathetic nerves, it might be hoped that migraine would be relieved by the administration of drugs possessing a paralytic effect upon the sympathetic nerve-endings. Such a possibility led Dr. Arnault Tzanck[1] to treat migraine with ergotamine tartrate, a drug which is credited with an inhibitory effect upon the sympathetic. Dr. Tzanck, in introducing his report on this treatment, comments on the ineffectiveness of numerous other therapeutic measures. The number of cases treated with ergotamine was small, but the results obtained were sufficiently encouraging to warrant its employment on a larger scale. The dose was 2·0 mg. of ergotamine tartrate daily by the mouth, an additional 2·0 mg. being given at the threat of an attack. After a time it was often found possible to reduce the dose to 1·0 mg. a day. Treated on these lines eight patients subject to typical recurrent attacks of migraine improved, the intervals between their attacks being lengthened from a few days to two or three months. It was sometimes possible to abort an attack by administering a dose as soon as the first symptoms appeared. Three other patients suffered from "a veritable status migrainosus," being hardly ever free from pain. Two of these were almost cured; the third abandoned the treatment. In a case of ophthalmic migraine the headache was almost completely relieved, but the ocular manifestations persisted, though in an attenuated form. Dr. Tzanck observed no ill-effects in patients taking as much as 60 mg. of ergotamine tartrate a month, but he recommends careful supervision on account of the reported occurrence of gangrene following the administration of this drug, an event which if true is difficult to reconcile with its reputation as a depressor of the sympathetic. Dr. Tzanck wisely refuses to draw any theoretical conclusions as to the cause of migraine from the success of ergotamine in its treatment.

[1] Bull. et Mém. Soc. Méd. des Hôp. de Paris. June 28th, p. 1057.

SPLENIC TUMOURS DUE TO FUNGI.

ATTENTION was drawn in these columns[1] some months ago to the evidence produced by Emil-Weil, Chevalier, and Flandrin, in France, to the effect that many cases of splenomegaly clinically of the Banti type are really due to a mycotic infection. Evidence that tumours of the spleen apparently malignant, even to the extent of producing distant metastases, may also be due to a mycelial infection, is now brought forward by the same authors.[2] They describe the case of a young man who suffered from 1920 to 1923 from progressive enlargement of the spleen, at the end of which time the organ was removed and weighed 62 kg. He made a good recovery, but in the following year developed a tumour of the occipital region, fixed to the bone, which ultimately attained the size of an orange. This disappeared under treatment with X rays, but its disappearance was associated with the development of symptoms of intracranial tumour. Relief was gained by decompression but the symptoms returned and death ensued in 1926, three years after the splenectomy. Examination of the spleen showed it to be filled with dense, firm tumour masses, and macroscopically a confident diagnosis was made of the "pseudo-sarcoma" of Letulle and Jacquelin. Serial sections, however, showed the tumour masses to be actually united into one, and microscopy revealed the presence of a dense fibrous stroma and of well-formed blood-vessels, both incompatible with the diagnosis even of a "pseudo-sarcoma." The actual tumour consisted of masses of lymphoid cells, with scanty larger cells, having two or more nuclei; portions of it showed hæmorrhage, calcification, and a plentiful deposit of iron pigment, such as was described by Gamna in his "hæmosiderotic" splenomegaly. Further examination revealed in these hæmorrhagic areas structures of a filiform nature which the authors believe to be the mycelial elements of a fungus; in some cases terminal organs which might be sporangia were detected. These supposedly mycelial elements stained poorly with hæmatein and did not take any other of the ordinary microscopic dyes—but they stained well with ferrocyanide and hydrochloric acid, giving the blue reaction of iron. So long ago as 1913 Dr. A. G. Gibson[3] demonstrated the presence of mycelioid elements in the spleens from certain cases of splenomegaly, and the present observations of Emil-Weil and collaborators, which bear upon the ætiology of Hodgkin's disease, should stimulate further research

[1] THE LANCET, 1928, i., 767.

[2] Le Sang, 1928, ii., 361.

[3] Proc. Roy. Soc. Med., 1913 (Med. Sect.), 7, and Quart. Jour. Med., 1914, vii., 153; see also J. Fawcett and A. G. Gibson, THE LANCET, 1928, i., 1171.

along the lines laid down by Gibson. The confirmation of his work so long after its performance, and by observers apparently unaware of his findings, must be regarded as highly significant.

SUPRARENAL APOPLEXY.

Dr. Felix Pearl and Dr. Harold Brunn,[1] of San Francisco, who describe a case in a man, aged 45, which has come under their observation, remark that hæmorrhage into the suprarenal gland, though not infrequently found in infancy, is a rare condition in the adult, only 20 instances of bilateral suprarenal apoplexy in adults having been reported since 1906. The ætiological factors suggested have been thrombosis, capillary emboli, congestive diseases, infections and toxins, diseases of the solar plexus, surface burns, and the hæmorrhagic diathesis. The cases have been classified by Arnaud into three types—peritoneal, asthenic, and nervous. Any combination of symptoms may form the clinical picture, but asthenia is the most constant and characteristic of all symptoms. Physical signs are usually of no assistance in locating the seat of the disease. There may be merely vague tenderness in the lumbar regions or epigastrium or abdominal distension as in the present writers' case. There is no pigmentation of the skin as in Addison's disease. The diagnosis has only once been definitely made before death, in a case reported by N. B. Foster in 1920, but the presence of severe abdominal symptoms, with few or no physical signs, in a patient who presents definite nervous manifestations, profound asthenia, and gradual decline of blood pressure, should suggest acute adrenal disease. The prognosis is hopeless in well-marked bilateral cases, but small hæmorrhages may be absorbed without sequelæ. Treatment of bilateral suprarenal apoplexy is usually unsuccessful. The best results are likely to be obtained by injection of normal saline, Ringer's solution, and extracts of adrenal cortex or whole suprarenal gland. Epinephrin is ineffectual. Although operation is of no benefit in well-marked bilateral cases, it may be the only hope where there is massive unilateral hæmorrhage and where death is likely to be due to severe hæmorrhage and shock rather than to suprarenal failure.

THE Royal College of Physicians of London will commemorate its benefactors on Thursday, Oct. 18th, when the Harveian Oration will be delivered by Sir Humphry Rolleston, at 4 P.M., in the large library. The annual sermon at the Church of St. Mary-le-Bow will be preached at 11 A.M. on the same day, and in the evening the commemoration dinner will be held in the College at 7.30 P.M.

OUR advertisement columns contain an official notice of the forthcoming election of two members to the General Medical Council, to represent the registered medical practitioners resident in England. A group of not less than 12 practitioners is entitled to nominate a candidate, and nominations must be delivered in proper form to the Registrar of the Council on or before Oct. 13th.

[1] Surgery, Gynecology, and Obstetrics, September, 1928, p. 393.

DONATIONS AND BEQUESTS.—A cheque for £1000 from an anonymous donor has been handed to the Glasgow Dental Hospital by a chartered accountant of the city.—Miss Martha Mills, of Nottingham, left £1000 to the Nottingham General Hospital for the endowment of a bed in memory of her brother-in-law, Morris Weisblum, and £100 each to Dr. Barnardo's Homes and the Nottingham General Hospital; £50 each to several other charities.—Mr. Miles Daniel Whitehead, of Kingstown, Co. Dublin, left £500 to the Drogheda Memorial Hospital at the Curragh, Co. Kildare, and £400 to Laura Hitchins, and the income for life from 800 shares in the Imperial Tobacco Co., with remainder to the Manchester Royal Infirmary if Laura Hitchins predeceased him.

OPENING OF THE LONDON MEDICAL SCHOOLS.

ADDRESSES AND ANNUAL DINNERS.

Charing Cross Hospital.—Prizes will be distributed at the hospital on Thursday, Oct. 4th, at 3.30 P.M., by Dr. Thomas Watts Eden. The annual dinner will be held at Gatti's Restaurant on the same day at 7 for 7.30 P.M., with Sir Herbert Waterhouse in the chair.

Guy's Hospital.—The session will begin on Tuesday, Oct. 2nd, but there will not be an opening ceremony.

King's College Hospital.—An introductory address will be given at the Medical School at 2.30 P.M. on Wednesday, Oct. 3rd, by Mr. Ernest Barker, professor of political science, in the University of Cambridge. Sir William Watson-Cheyne, F.R.S., will preside. The annual dinner of past and present students will be held at 7.30 P.M. on Wednesday, Oct. 3rd, at the Trocadero Restaurant, Piccadilly-circus, W., with Dr. B. R. Turner in the chair.

London Hospital.—The old students' dinner is to be held at the Trocadero Restaurant on Thursday, Oct. 18th, at 7.30 P.M.

London (R.F.H.) School of Medicine for Women.—An introductory address will be given at the school at 3 P.M. on Monday, Oct. 1st, by Dr. Andrew Balfour, whose subject will be the Tropical Field, its Possibilities for Medical Women.

Middlesex Hospital.—Mr. A. E. Webb-Johnson will deliver an introductory address, entitled the Enemies of Man, at the Queen's Hall at 3 P.M. on Tuesday, Oct. 2nd, after which Prince Arthur of Connaught will distribute prizes and Princess Arthur will present the Fardon Memorial medals. The annual dinner will be held at the Savoy Hotel on the same day at 7.30 P.M., with Prince Arthur in the chair.

Pharmaceutical Society of Great Britain.—On Wednesday, Oct. 3rd, at 3 P.M., an inaugural sessional address will be given by Mr. Reginald R. Bennett, chairman of the British Pharmaceutical Conference. A presentation of the Pereira medal will be made. On the same day, at 6.45 for 7 P.M., the anniversary dinner will take place at the Hotel Victoria, Northumberland-avenue, W.C. 2.

Royal Dental Hospital.—The dinner of past and present students will be held at 6.30 for 7 P.M. on Saturday, Oct. 20th, at the Trocadero Restaurant. Mr. G. G. Campion will preside.

St. Bartholomew's Hospital.—The old students' annual dinner will be held in the Great Hall of the hospital at 7 for 7.30 P.M., on Monday, Oct. 1st, with Sir D'Arcy Power in the chair.

St. George's Hospital.—The prize distribution will be held in the Board Room of the hospital at 3 P.M. on Monday, Oct. 1st, when an inaugural address, entitled Hydrocephalus: A Study in Phylogeny and Pathology, will be delivered by Sir John Bland-Sutton. The annual dinner will be held on the same day at the Hyde Park Hotel at 7.15 for 7.45 P.M. The chair will be taken by Dr. W. S. Fox.

St. Mary's Hospital.—The annual dinner of past and present students is to be held at the Trocadero Restaurant on Friday, Oct. 5th, at 7 P.M.

St. Thomas's Hospital.—The old students' dinner will be held at St. Thomas's House on Friday, Oct. 26th, with Mr. Edwin Francis White in the chair.

University College Medical School.—The session will open on Monday, Oct. 1st, when Sir Thomas Barlow, F.R.S., will give an introductory address in the Library at 4.30 P.M. The annual dinner of past and present students will take place at the Hotel Cecil on Friday, Oct. 12th, Surgeon Vice-Admiral Gaskell in the chair.

Westminster Hospital.—An inaugural address will be given in the Board Room of the hospital on Monday, Oct. 1st, at 3 P.M., by Mr. A. C. Powell, headmaster of Epsom College. Sir William Goschen will take the chair. The hospital dinner is to be held on the same day, at 7 P.M. for 7.30, at Gatti's Restaurant, Strand, W.C., Sir James Purves-Stewart presiding.

PRESENTATION OF WILLIAM MACKENZIE MEDAL.—This medal, given for valuable contributions to ophthalmology, will be presented to Dr. A. Maitland Ramsay at the Glasgow Eye Infirmary, on Tuesday, Oct. 9th, at 8 P.M., when Dr. Ramsay will deliver an address on the Importance of General Methods in the Treatment of Eye Disease.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

V.—THE INTERPRETATION OF REPORTS ON SPUTUM.

By S. Roodhouse Gloyne, M.D. Leeds, D.P.H. Lond.,
PATHOLOGIST TO THE CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS.

(2)* Cellular and Bacterial Content: Unusual Substances.

Cellular Content.

The cells of the sputum are often difficult to differentiate, but when they can be identified they are helpful in diagnosis. The dominance of large squamous epithelial cells indicates a condition of pharyngitis or coryza. Polymorph cells in large quantities are, of course, found in any purulent sputum and are not diagnostic of any special disease. They can be found in small numbers in specimens of sputum which are not purulent. In uncomplicated phthisis they are, as a rule, not very conspicuous, and when they predominate point to secondary infections. Alveolar cells from the lung are not easy to distinguish; they predominate in pulmonary tuberculosis. Ciliated bronchial epithelium is most difficult to detect even with special methods of staining, owing to the fact that it readily degenerates when the ciliated processes become unrecognisable. Malignant cells cannot be recognised with any degree of certainty, though large cellular plaques of cells are often suspicious. It is sometimes stated that predominance of the lymphocyte is an early sign of pulmonary tuberculosis. In the writer's experience this is not so. A predominance of eosinophil cells is often found in true asthma. Saliva and mucus contain few cells.

The Bacterial Flora.

The tubercle bacillus, suitably stained by the accepted Ziehl-Neelsen technique, is easy to recognise when present in any considerable number. Difficulty arises when the bacilli are very scanty. In doubtful cases of pulmonary tuberculosis it is advisable to examine a fresh specimen of sputum daily for at least a week before being satisfied that they are not present. Much depends on selecting the typical "nummules" in the sputum for examination. If search by this method fails a concentration test may be made. Several drachms of sputum are mixed with an equal amount of 5–10 per cent. antiformin; the mixture is allowed to stand for 15 minutes or so until the sputum is disintegrated, and then centrifuged, washed with water, recentrifuged, and a film of the deposit stained by the usual method. Unfortunately the method cannot be applied to a large series of specimens at one time, as in the ordinary film examination for *B. tuberculosis*, and therefore time does not permit its use as a routine. The method is said to increase the positive findings for tubercle bacilli by about 1 per cent. A daily examination by the ordinary film method for a week is equally efficacious and less laborious where large numbers of specimens have to be dealt with. The presence of large numbers of tubercle bacilli does not necessarily signify an acute infection. Chronic cases in fairly good health often have many bacilli in their sputum. A report on the number of bacilli seen per field of the microscope is therefore not of great value. Moreover, the actual count is dependent on variable factors such as the thickness of the film. At one time much stress was laid on the presence of so-called involution forms of tubercle bacilli as an aid to treatment and prognosis. It is doubtful if this sign is of any value.

In uncomplicated phthisis the sputum contains very few organisms other than the tubercle bacillus, but in the late stages of the disease catarrhal infections may be superimposed, and then the secondary organisms are many and various. Non-pathogenic acid-fast organisms are sometimes met with in sputum, but they are generally readily distinguished from the tubercle bacilli by their shape, size, and arrangement, and by the fact that they are rarely alcohol-fast and do not resist treatment with antiformin. Such bacteria generally come from the nose or ear. In case of doubt recourse must be had to guinea-pig inoculation.

Three or four years ago pathologists were frequently asked to report on the type of pneumococcus in cases of pneumonia, prior to the administration of anti-pneumococcal serum, but of late the practice has much diminished—presumably clinicians are not satisfied with the results of the serum treatment. Three types of pneumococcus are recognisable by means of agglutinin or precipitin tests. Types I. and II. are most commonly found in uncomplicated pneumonia and type III. in the rapidly fatal cases. Hæmolytic streptococci are not uncommon in the purulent sputum of "influenzal" broncho-pneumonia and imply a serious prognosis. Organisms of the coliform group are common in the fœtid sputum of bronchiectasis and pulmonary abscess. *B. pyocyaneus* is found in the same condition.

In interpreting a report on the bacterial flora other than *B. tuberculosis*, it is frequently difficult to know what emphasis to place on the different findings. Much depends on the efficiency with which the patient has washed out his mouth before expectorating the sample. Sarcinæ, leptothrices, yeasts, and even *Staphylococcus albus* are of very little significance. The so-called diplo-streptococcus also is not as a rule of much significance. Pneumococci, streptococci, *M. catarrhalis*, *B. pneumoniæ* Friedländer, and *B. influenzæ* are of pathological significance. Any combination of them may be found together and they are all common during the catarrhal seasons of the year, irrespective of the anatomical situation of the lesion. A bacteriological report should state which of the species predominates. It is sometimes said that any species found to be intracellular is of special pathological significance. As stated above, a sputum crowded with organisms of all kinds, especially if the sputum be foul smelling, is very suspicious of bronchiectasis or pulmonary abscess. When "granules" are found in the sputum actinomycosis fungi should be searched for. This disease is characterised in the lung by its frequent association with "pointing" empyema and may follow operation for appendix abscess. Others of the higher bacteria—e.g., mucor and aspergillus—are also sometimes found in sputum associated with bronchitis. It must be remembered, however, that mucor especially may be an accidental contamination, and its presence should be confirmed by repeated examination. As a rule these cases give a history of some occupational risk or dusty trade.

Unusual Substances.

Curschmann's spirals and Charcot-Leyden crystals are, of course, associated with true spasmodic asthma; and *Entamœba histolytica* with tropical abscess rupturing through the diaphragm. The latter is characterised by "anchovy paste" sputum. When search for the entamœba is required, the specimen of sputum should be as fresh as possible. Fibrin is found in sputum where there is extensive lung tissue destruction, as in chronic phthisis, bronchiectasis, and pulmonary abscess; it is the one object of search which necessitates a large amount of sputum for examination (an ounce or more).

Sputum may contain unusual substances such as pieces of sloughing mucous membrane, calcified nodules, or foreign bodies. These should always be sent to the laboratory for identification.

The hooklets of hydatid disease may also be found in sputum. Although this disease is not common in this country, it does sometimes occur associated with hæmoptysis or signs of lung compression.

* Part (1) appeared in THE LANCET last week.

With regard to *animal inoculation tests*, now that pneumococcus typing tests—for which the mouse was generally used—are only occasionally made, the guinea-pig test for tubercle is the commonest inoculation test required. One of its disadvantages is the length of time which must elapse before a report can safely be made—i.e., about one month. In cases of urgency it is best to inoculate two animals and to kill one at the end of a fortnight, leaving the other to go on for a month or six weeks.

Special Articles.

SOME CONSTITUENTS OF DRIED YEAST AND YEAST EXTRACTS.

THEIR APPLICATION IN HUMAN NUTRITION.

By STANLEY G. WILLIMOTT, PH.D. CAMB. AND LIVERP., B.SC.;
AND
FRANK WOKES, B.Sc., F.I.C.
(*From the Biochemical Laboratory, Cambridge.*)

IN a recent discussion in THE LANCET [1] on the relative food value of white and wholemeal flour the suggestion was made that the admitted deficiency of vitamin B in white flour might be made good by yeast. "Any lack of vitamin B in white flour is definitely remedied when the flour is made into bread by the addition of yeast." [2] No data, however, were offered concerning either the vitamin content of different yeasts or the amounts of these yeasts which are normally employed in bread-making. In the absence of this necessary information the suggestion has, not unnaturally, been severely criticised.

In the meantime, progress in improvement of the staple cereal food of the nation appears to have reached a deadlock. Reasons for this are not hard to find. Perhaps one of the strongest is the conservative attitude adopted by most people towards a suggested radical change in the largest part of their diet. Bread, on an average, constitutes at least two-fifths of the diet of the mass of the population. The questions of appearance, palatability, coarseness of texture (often due to the bran employed), digestibility and keeping qualities have also proved to be important determining factors. Finally, there is the economic problem. Wholemeal bread is still slightly dearer than white bread.

This position is unfortunate, as by the proper use of yeast all these objections can be overcome. Yeast is undoubtedly a cheap and potent source of vitamin B, and abundant supplies are readily available. As long ago as 1910 Schaumann [3] obtained from yeast an extract of high physiological activity, but he drew no satisfactory conclusions regarding the constituents to which this activity was due. In 1912 Sir F. Gowland Hopkins [4] showed that yeast contained a potent growth-promoting factor which, in the light of further knowledge, was presumably vitamin B. During the last few years yeast and yeast preparations have been increasingly employed as standard sources of vitamin B. From these facts the idea has naturally arisen of supplying to white flour the missing vitamin B by the use of a potent yeast. The question which remains to be decided is the proportion of yeast necessary to be added to ensure a palatable bread of adequate potency.

On the manufacturing side experiments are already being made. There are now being placed on the market a number of white flours to which dried yeast in different proportions has been added. The results given by these modified flours, taken in conjunction with the laboratory findings here recorded, will be of great value in human nutrition. Every busy practitioner must feel somewhat bewildered at the number and the claims of proprietary preparations, purporting to contain vitamin B, with which his consulting room is constantly flooded. In these circumstances impartial scientific data may be of service. An investigation was therefore undertaken into the possibility of employing dried yeast and yeast extracts to supply the constituents lost in the removal of the wheat germ by the usual milling processes of to-day. These constituents include vitamins, proteins, and various mineral salts. Amongst the latter, phosphates are perhaps of most interest on account of their relation to nerve nutrition, in which vitamin B (antineuritic factor) appears to play a part. In fact, so well recognised is this removal of minerals in modern milling processes that one classification of flours is based on their mineral content. The most highly refined white flour, for example, is generally found to contain less than 0·4 per cent. of minerals, an average seconds flour from 0·7 to 0·8 per cent., and a wholemeal 1·0 per cent. or more, as compared with 1·4 to 1·9 in the whole wheat berry.[5] Of the total minerals, roughly two-thirds consist of potassium phosphate.

Another staple cereal food, rice, also has its vitamins and its minerals, especially phosphates, removed by modern milling processes. Unpolished rice was found by Fraser and Stanton [6] to contain about twice as much phosphate as polished rice. In the earlier work on beri-beri the curative substance was believed to be either itself an organic phosphorus compound, or some other substance closely associated with such a compound. This view was officially adopted by the Far Eastern Association of Tropical Medicine. A resolution [7] was passed that rice containing less than 0·4 per cent. of phosphorus should be excluded by law from those countries in which this cereal formed the staple food grain. Later work,[8] however, disproved the suggestion that vitamin B is a phosphorous compound. But the association of vitamin B with phosphorous compounds in rice, wheat and other natural foodstuffs is still of great practical importance.

If the vitamin and minerals absent from white flour are to be adequately supplied by yeast preparations, these constituents must be present in sufficiently high concentration to furnish the necessary amounts of each factor when the yeast is added at a level practicable from the point of view of palatability, &c. The level at which fresh yeast is ordinarily added to flour in bread-making is variable, though always in the neighbourhood of 1 per cent.[9] The actual amount of yeast added depends upon the length of time the dough is to be fermented. Thus with 12 hours' fermentation the quantity of compressed yeast added just exceeds 0·1 per cent. of the weight of the flour, but with only one hour's fermentation the percentage of yeast employed rises to 1·4.[10] However, it is possible to add a suitable dried yeast to flour up to a level of 4 or 5 per cent., producing a flavour which is distinct but not disagreeable. Vienna bread, for example, which contains a large proportion of yeast, is noted for its palatability.

The proportion of dried yeast necessary to supply an adequate amount of vitamin B to white flour is about 3 or 4 per cent. of the flour used. Taking the average moisture content of fresh yeast as 70 to 80 per cent., this would be equivalent to approximately 15 per cent. of fresh yeast. Therefore the highest amount of fresh yeast known to be employed in bread-making—i.e., 1·4 per cent.—is only about one-tenth of what would be required to furnish sufficient vitamin B. These findings lend no support to the statement made by several investigators that "any lack of vitamin B in white flour is definitely remedied when the flour is made into bread by the addition of yeast,"[2] where fresh yeast is meant. On the other hand, our results show that it is possible to make good the deficiency by the proper use of dried yeast. In order to avoid undue fermentation by the large proportion of yeast, this must have been dried at a temperature sufficiently high to destroy the diastatic enzymes.

The fact that dried yeast has a distinctly bitter flavour has led to efforts to extract the vitamins and other valuable constituents from fresh yeast by treatment with suitable solvents which do not remove the bitter constituents so readily. The extracts thus obtained are exhibited in the liquid or semi-solid condition as a palatable adjunct to the diet. In such forms vitamin B is commonly prescribed to-day. The tendency of modern diets to be deficient in vitamin B [11] has afforded opportunity to manufacturers of such extracts to advocate their general use. Evidence has recently been put forward by Plimmer, Rosedale and Raymond [12] that the vitamin B potency of such extracts may vary as much as 200 or 300 per cent. Fresh brewers' yeast is known to have a high vitamin content. Therefore it appeared probable that this variation in vitamin activity was due, in part at least, to differences in the method of extraction employed. A consideration of these facts suggested the desirability of examining quantitatively samples of yeast and of extracts prepared from them. This necessitated ascertaining their content of vitamins by feeding experiment, and of mineral and other constituents by analysis.

Preparation of Yeast Extracts.

In preparing extracts of yeast for human consumption several points have to be considered. A solvent must be employed which will take out as much as possible of the vitamins and other desired constituents—e.g., phosphates—while leaving behind the unpalatable, bitter principles. (Vitamin B is now known to contain at least two factors, the antineuritic principle of Eijkman [13] or vitamin B, and the pellagra-preventive (P-P) factor of Goldberger [14] or vitamin B_2. Whenever the term vitamin B is used, both these factors are implied.) Vitamin B is known to be soluble in water, in aqueous solutions of certain salts, and in water-alcohol mixtures. By employing a suitable strength of alcohol (say, 75–80 per cent.) fairly complete extraction of the vitamin can be effected without dissolving any considerable proportion of the bitter principles.

On the commercial scale, where the expense of alcohol is an important consideration, satisfactory results can be obtained by heating the yeast with strong saline solutions under proper conditions. The exact conditions employed by different manufacturers are, of course, industrial secrets. Apparently the saline solutions employed vary widely in strength, from 2 to 10 per cent. or more, and the time of heating may be anything from half an hour to several hours. The destruction of the yeast enzymes without serious loss of vitamin potency is thus ensured. Finally, in view of the wide variation in composition of different batches of yeast, it is important to use raw material from carefully selected sources, and produced under properly controlled conditions. From recent work by Randoin and Lecoq [15] it appears probable that distillery yeast differs from brewers' yeast in not containing the antineuritic principle of Eijkman.

Perhaps the first yeast extract to be placed on the market was marmite. This preparation is a stiff, dark brown paste, containing about 27 per cent. of water, the same proportion of salts, and about a third its weight of nitrogenous matter (see Table I.). It can be rubbed down with water to form a dark brown liquid of a salty, bitter taste. It is noteworthy that this product contains a large proportion of salt (about 13 per cent.) compared with less than 0·2 per cent. in average samples of fresh yeast. Since its introduction marmite has been largely employed as a standard source of vitamin B both in clinical practice and in research. On account of variations in the activity of marmite, dried yeast is probably a more satisfactory standard for research work. For therapeutic use, on the other hand, an extract such as marmite is more convenient. Marmite was administered in large quantities as a prophylactic against beri-beri to the troops in Mesopotamia during the war. A tablet containing ¼ oz. of marmite was given once or twice a week to supplement the vitamin B content of the ration. In preparing these tablets some difficulty was experienced on account of the bitter taste. This was eventually overcome by admixture with suitable fat, such as bacon fat or cotton-seed oil.[16] In our own experiments it was decided to overcome the bitter taste of marmite, and also obtain greater accuracy of dosage, by making an alcoholic extract. 250 g. of fresh marmite, purchased on the open market, were extracted with 75 per cent. alcohol by mechanical shaking in a stoppered Winchester at room temperature for over three hours. The aqueous-alcoholic extract was then decanted off, and the alcohol removed by heating on the water bath at 80° C. for an hour, using broken pot to facilitate the distillation of the solvent. The work of Chick and Hume [17] shows that this treatment would destroy very little of the vitamin B present. When no more solvent distilled over, the dark-coloured aqueous extract remaining in the flask, containing the vitamin B, was filtered and made up to 250 c.cm. with distilled water. Thus 1 c.cm. of this extract was equivalent to 1 g. of marmite. It was almost free from the bitter taste of the original product.

It has recently been suggested by Plimmer [11] that the vitamin potency of marmite has diminished within the last few years, since a larger dose—i.e., 4 per cent. of the diet—is now required to produce the same curative effect as was previously obtained with only 2 per cent. Workers in other laboratories have experienced similar results (private communication). Since the earlier experiments were carried out, however, much more has been learnt of the necessity of balancing the vitamin B intake against various constituents of the diet (Funk,[18] Hartwell,[19] and Plimmer [20]). This knowledge has led to the introduction of more accurate methods of testing for the vitamin, and may be one of the causes of the apparent deterioration of the marmite. A further complication arises from the recent confirmatory work of Chick and Roscoe [21] that vitamin B contains at least two factors—viz., the antineuritic principle of Eijkman and the pellagra-preventive factor of Goldberger. Since both factors are necessary for the maintenance of health and growth (Chick and Roscoe), these criteria have been employed in our estimations of the vitamin B content of various extracts.

In addition to marmite, Plimmer [11] also tested five other samples of yeast extract and discovered a variation in vitamin B potency of 200 or 300 per cent. Some were weaker and others were stronger than marmite when tested on pigeons by the same procedure. Our own experience with rats having confirmed this wide variation in the content of the most important constituent, we considered it advisable to carry out experiments on the efficacy of industrial extraction methods. For this purpose it was necessary to obtain a standard supply of fresh yeast, prepare an extract from it under known conditions, and determine the amount of vitamin and other constituents both in the extract and in the residue. The data thus obtained should indicate the efficiency of the process for extracting the vitamins and other principles, and also afford some evidence on the significance of phosphates and other analysable constituents in yeast extracts. For the preparation of this experimental extract the raw material employed was a good quality brewers' yeast, obtained from a satisfactory source, in which strict analytical control was maintained over the purity of the product. Immediately after removal of the alcoholic liquor it was conveyed to the laboratory, and heated to 98° C. with a strong saline solution (about 5 per cent.) for several hours but not long enough to affect the vitamins. The extract was then cooled and filtered, using moderate pressure, and the filtrate, which was a brown liquid with a pleasant taste, was stored under refrigeration conditions during the investigation. Analysis of this experimental extract*

* A yeast extract, prepared in a similar manner and presumably of the same composition, has recently been placed on the market under the title "Verva" by Mr. Hugh Mapleton, of Garston, Liverpool, to whom we are indebted for supply of materials and certain manufacturing facilities.

showed that it contained only about one-third of the amount of nitrogenous derivatives found in commercial yeast extracts such as marmite. On the other hand, its water-content being double that of marmite, some reduction in vitamin potency might be anticipated. This reduction could have been obviated by concentration of the extract to a paste but, in view of the greater accuracy of liquid dosage, concentration was not attempted. The next step, therefore, was to ascertain by feeding experiments the comparative potency of the extracts in vitamin B.

Feeding Experiments with Yeast Extracts.

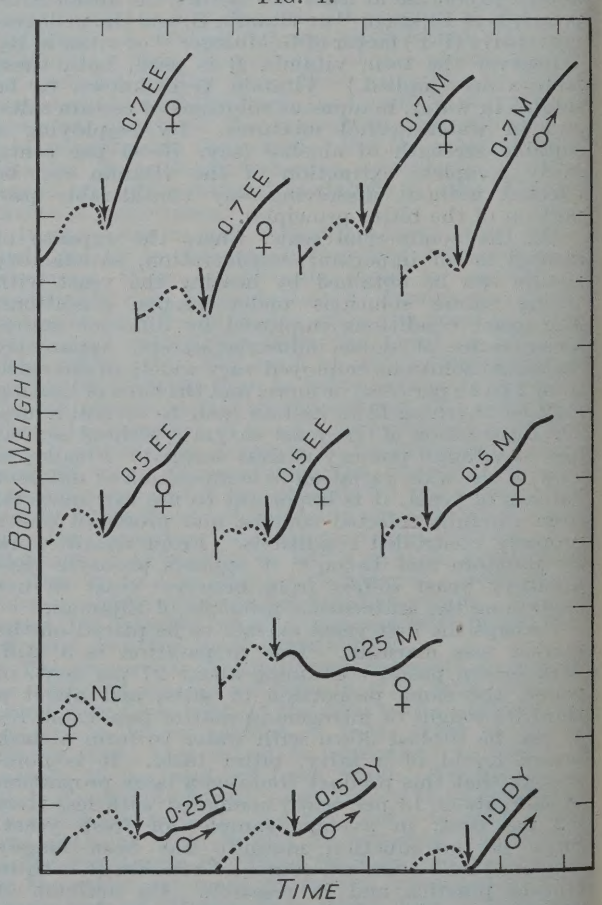
For an accurate assay of vitamin B it is essential that the basal diet shall be as free as possible from this vitamin. This can be ascertained by restricting a group of young standard rats to the basal diet whilst supplying vitamins A and D in the form of cod-liver oil. It is advisable not to attempt to supply vitamin C, because the usual sources of this vitamin are liable to be contaminated with vitamin B.[22] Moreover, it is well known that the absence of vitamin C does not appear to exert any prejudicial effect on the rat.[23] On such a vitamin B-free diet growth of all the rats should cease, and a steady decline in weight set in within two or three weeks. Precautions must be taken to prevent the animals gaining access to their fæces, which may serve as a source of the vitamin. The condition of the carbohydrate in the diet is of great importance, and constitutes a problem in itself. Recent work by Bacharach and Hartwell [24] indicates that on a diet lacking vitamin B the loss in weight appears more quickly when uncooked starch is employed.

The vitamin B deficient diet usually employed in Cambridge during recent years [25] has the following composition: raw potato starch, 40; sugar, 17; refined palm kernel oil, 15; purified caseinogen, 23; salt mixture, 5. This ration, with the addition of cod-liver oil, has usually been found to produce stoppage of growth within three weeks. In certain cases, however, irregular results have been obtained. Our most extreme case was one in which ten young albino rats after five weeks on the experimental diet were still increasing in weight, and showed an average growth increase of about half the normal. These abnormal results led to an examination of the diet for possible contamination with vitamin B. The caseinogen had been heated to above 120° C. for several hours and also had been well extracted with alcohol. It was therefore free from vitamin B. The palm kernel oil was also known by tests to be free from this vitamin. Since there is little storage of vitamin B in the body of the rat the discrepancy was traced by elimination to the potato starch. Potato starch has been used by many investigators as the source of carbohydrate in diets employed for the estimation of vitamin B. The Medical Research Council's Report on Accessory Food Factors,[22] for instance, states that starch is devoid of this vitamin. Nevertheless, our experience was that potato starch may contain sufficient vitamin B to affect seriously a vitamin assay. On replacing the potato starch of our synthetic diet by rice starch, without disturbing any other constituent, failure of growth in the normal period was at once secured (see Fig. 1) in this and other researches.[26]

A series of 12 standard albino rats (Wistar Institute strain) was then placed upon the improved vitamin B-free diet. In every case stoppage of growth had occurred within a fortnight, and before the end of the third week the weight was rapidly declining, and in several cases had reached the original level (see Fig. 1). The animals were now obviously in a poor physical condition, and in a few cases displayed premonitory symptoms of paralysis. The food intake was about 4 g. per head per day. At this point the yeast extracts were administered in doses ranging from 0·25 to 0·7 g., given separately to each animal in advance of the basal ration. One animal, which was continued on the vitamin B deficient diet as a negative control, died within a few days with definite symptoms of vitamin B deficiency. Considerable differences were observed between various animals in regard to the ease with which they accepted their doses of yeast extract. Small amounts of 0·25 g. were usually taken without difficulty, but a little sugar was found to assist the ingestion of larger doses. The marked loss of appetite is another difficulty and requires special precautions. During the actual consumption of the specified doses the animals occupied separate cages. In view of the apparent greater need of females for vitamin B [27] the experimental animals employed were mainly females. On the highest dose (0·7 g.) a male gave similar results to a female, allowing for the rather more rapid growth of the normal male. The initial weight of the animals has been shown by Osborne and Mendel [28] to have an important effect on the vitamin B requirement of rats. In the present experiments care was taken to place animals with similar initial weights on the same dose of the two extracts under test. Those with lowest initial weights were selected for the lower doses of the vitamin.

About a decade ago a number of workers found that an average dose of 0·25 g. of marmite was sufficient to restore normal growth in rats which were declining as a result of vitamin B deficiency. When, however, we tested this dose last year, either as original marmite or as the alcoholic extract, the growth response was very slight. Moreover, no significant difference in effect was observed between the original marmite or the alcoholic extract of it. (From this finding it was concluded that the method of extraction of vitamin B from marmite was reasonably efficient.) In Fig. 1 is given a typical result with this dose of 0·25 g., from which it will be seen that the animals' weight actually fell during the first two weeks of receiving the marmite. Nearly seven weeks of marmite dosage had elapsed before the animal regained and passed its initial weight. In this case recovery was finally achieved, but in several others,

FIG. 1.



Vitamin B content of dried yeast and yeast extracts. Growth curves of standard albino rats receiving dried yeast and yeast extracts in different doses as sole source of vitamin B. Each vertical division represents 20 grammes of body-weight, whilst each horizontal division represents 20 days. The broken lines represent growth on the basal B free diet; the continuous lines represent the growth after the addition of the yeast. EE denotes experimental extract. M denotes marmite. NC denotes negative control (receiving no yeast or other source of vitamin B). DY denotes dried yeast (the residue left after preparation of the experimental extract).

details of which have been omitted in order to save space, death supervened.

A dose of 0·25 g. of marmite having proved insufficient, the amount was now increased to 0·5 g., while two similar animals were put on the same dose of the experimental extract. The growth response was much better than with the 0·25 g. dose, and the experimental extract appeared to be at least as potent as the marmite, although containing only two-thirds the amount of total extractive matter. The rate of growth was still subnormal. A still higher dose of 0·7 g. was therefore tried, two animals being placed on marmite and two on the control extract. From Fig. 1 it will be seen that with this dose practically normal growth was secured with both the yeast extracts. The food intake was 8–9 g. per head per day. Possibly a dose between 0·5 and 0·7 g. might have proved adequate. From other experiments, we believe the minimum adequate dose to be not much below 0·6 g. These results might be taken to indicate that the vitamin B content of marmite has diminished to less than one-half of its original value during the last few years. Part of this apparent loss may be due to refinements in technique, and probably the figure suggested by Plimmer [11] of a 50 per cent. deterioration is more nearly correct.

Feeding Experiments with Dried Yeast.

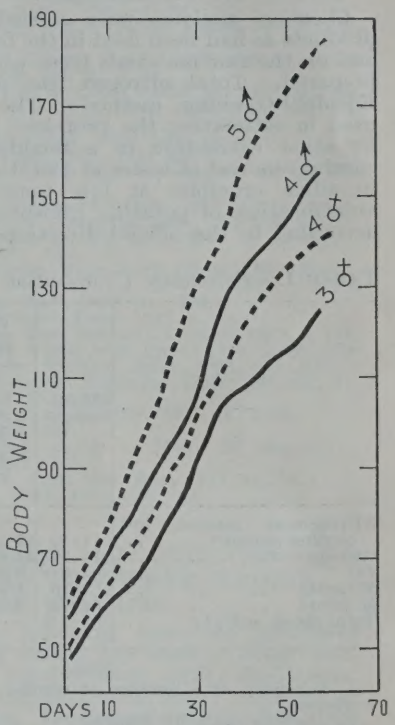
From the standpoints of industry and research alike, dried yeast is a most important source of vitamin B. The removal of the moisture produces, with proper precautions, a stable and highly concentrated product, very suitable for mixing with white flour in bread-making, to increase the vitamin B content; it has also been found the most satisfactory standard for assay work.[29] Experiments have shown that a good sample of dried yeast should restore normal growth when fed in doses of 0·3 to 0·5 g. to rats suffering from vitamin B deficiency. Taking the daily food intake as about 10 g. per head, this would mean from 3 to 5 per cent. of the diet. Some dried yeasts of unusually high potency may be effective in the proportion of 2 per cent.

The above experiments showed that it is possible to obtain from yeast an extract containing only 50 per cent. of solid matter, of which doses of about 0·6 g. are adequate. The next step was to determine how much, if any, vitamin B was left in the residue from which the extract had been prepared. For this purpose it was decided to remove all moisture from the residue, in order that it might be fed as a dry product. The residual sludge was dried by passage over steam-heated rollers in such a thin layer that less than one minute's exposure to the temperature of 100° C. sufficed to drive off practically the whole of the moisture. By this means any destruction of vitamin B was avoided. The product was in the form of thin light brown flakes, which were readily reduced to powder. Less than 1 per cent. of this powder failed to pass through a sieve of No. 40 mesh. Thorough mixing of the sieved powder ensured a product of uniform consistency, truly representative of the residue from which it had been obtained. The powder, when stored without any special precautions, underwent no noticeable deterioration in 12 months. Tests showed it to be free from diastatic enzymes. It was then fed to three rats suffering from vitamin B deficiency, in doses of 0·25, 0·5, and 1·0 g. respectively. The results, which are recorded in Fig. 1, indicate that 0·5 g. produced rather better growth response than 0·25 g. of marmite; 1·0 g. was about equal to 0·5 g. of the experimental extract. Allowing for the water content of the latter, the actual ratio of curative doses in the solid matter was therefore about 4 in the extract to 1 in the residue. Hence it would appear that the method of extraction employed had taken out roughly four-fifths of the total amount of vitamin B present in the raw material.

Nutritive Value of Yeast Protein.

In view of the high proportion of protein and other nitrogenous constituents in yeast, the question arises as to the possible value of these in nutrition, and the effects produced by their ingestion in large amounts. Various preparations of yeast have been used both for human and for animal food, and divergent opinions on their nutritivevalue are to befound in the literature. According to Berg,[30] the so-called "nutritive yeast," which was intended to be a rich source of protein for human consumption in Germany during the stringent times of the war, failed in its purpose. Others have reported that the protein of yeast is of low biological value. Hawk, Smith, and Holder[31] find that yeast protein cannot usefully exceed from 10 to 30 per cent. of the diet of man. If an excess of yeast is taken diarrhœa results. In view of these discrepant opinions, it was decided to test the dried yeast residue remaining over from the extraction process in the preparation of the experimental extract, and containing the larger part of the nitrogenous constituents of the original yeast. This was employed as the sole source of nitrogen, and was supplied in the unusually high concentration of 50 per cent. of the total ration, so that any possible toxic effect might be readily revealed.

FIG. 2.



Dried yeast as a source of protein. Growth curves of standard albino rats receiving dried yeast as sole source both of protein and of vitamin B. (Body-weight is shown in grammes.) Each curve is a composite one giving the average growth of a group of animals of the same sex. The continuous lines represent growth of the experimental groups receiving the whole of their protein in the form of dried yeast; the broken lines represent growth of control groups receiving their protein in the form of caseinogen. Apart from this difference, and the supply of vitamin B to the control groups as marmite, the diets were identical.

Seven albino rats of the same stock as previously used, and of about 52 g. initial weight, were restricted to the following diet:—

Dried yeast ..	.. 50	Cane sugar ..	.. 30
Palm kernel oil	.. 15	Salt mixture ..	.. 5

All the ingredients except the dried yeast had already been tested for their freedom from vitamin B. The dried yeast was thus the only source of this vitamin as well as of protein. As before, vitamins A and D were supplied in the form of cod-liver oil, while vitamin C was not provided. The bitter taste due to the high proportion of yeast was overcome by careful admixture with the fat, and by replacing the starch of the diet by sugar. In making up the diet, allowance was made for the carbohydrate carried by the dried yeast, so that the nutritive ratio of the original formula was not disturbed. The experimental conditions were the same as before.

After a few days the animals had become accustomed to the diet and the ration was readily consumed, the food intake rising gradually from 5 g. a day. All the animals grew at a steady though somewhat suboptimal rate. After eight weeks of experiment, the average increase in weight for the males was 100 g., and for the females 77 g., compared with 125 g. and 92 g. respectively for two other groups of animals on the complete ration containing caseinogen (see Fig. 2). The food intake had risen to 9 or 10 g., and all the animals appeared to be well nourished and had good coats and bright eyes, with no neuritic symptoms. Autopsies failed to reveal any pathological conditions.

It was concluded, therefore, that (1) the dried yeast constituted a satisfactory protein when fed at the

level of 50 per cent. of the ration, (2) that it produced no deleterious effect when administered in quantities considerably larger than was necessary to supply sufficient vitamin B. No laxative effect was observed.

Analyses.

Chemical analyses were carried out on the same products as had been used in the feeding experiments, and on the raw materials from which these had been prepared. Total nitrogen was determined by the Kjeldahl-Gunning method. The factor 6·25 was used in estimating the protein. Fat was estimated by ether extraction in a Soxhlet apparatus, after careful removal of water at 100° C. Ashing was done in silica crucibles at low temperatures to avoid volatilisation of potash. Phosphorus was estimated according to the official directions published by the Board of Agriculture for the examination of feeding stuffs.

TABLE I.—*Percentage Composition of Yeast Products.*

—	Moist yeast.[1]	Dried yeast.		Yeast extracts.[4]		
		From marmite.[2]	From experimental extraction.[3]	Marmite.[3]	Cerema.[2 5]	Experimental extraction.[3]
Nitrogenous matter, including protein[6] ..	11–15	43·5	45·6	37·6	24·4	11·7
Carbohydrate	15–23	44·5	44·0	11·4	29·6	19·5
Fat[7]	0·4–1·0	0·9	1·3	—	—	0·5
Minerals[8]	2–10	8·6	5·0	24·2	17·4	19·1
Moisture	65–75	2·5	4·1	26·8	28·6	49·8
Total phosp. as P_2O_5[9] ..	0·5–1·0	—	1·6	4·2	—	2·0

Notes.

1. Summary of a number of results obtained by different workers.
2. Analysis made by Plimmer.[32]
3. Analysis made in 1927 by the authors on the material used in feeding experiments. Earlier analyses by other workers show considerable variations in the composition of marmite.
4. Tested by the method of Searl,[39] creatinine, a characteristic constituent of meat extracts for which these yeast extracts were introduced as substitutes, was found to be absent.
5. Cerema is a somewhat cheaper form of yeast extract introduced as a substitute for the more expensive marmite. When examined by Plimmer and Rosedale,[32] however, it had only three-quarters of the vitamin B potency of the latter.
6. The actual protein content of yeast has been found to vary considerably.
7. Fat content varies with conditions of nutrition. These are average figures.
8. This includes, in the case of the extracts, salts added for the purpose of extraction.
9. This includes both inorganic phosphates and organic phosphorus compounds (phospholipins and phosphoproteins).

TABLE II.—*Vitamin B Content (Composite Factors) of Dried Yeast and Yeast Products.*

—	Moist yeast.[1]	Dried yeast.		Yeast extracts.	
		From marmite.[1]	From experimental extraction.	Marmite.[5]	Experimental extraction.
Minimum curative rat dose (g.)[2]	0·5–0·8	0·2	1·0	0·4–0·6	0·6
Minimum percentage in diet of rats[3]	5–8	2	10	4–6	6
Minimum percentage in human diet[4]	7–12	3	15	6–8	9

Notes.

1. Data given by Plimmer and other workers.
2. Minimum dose which will restore normal growth when supplied as sole source of vitamin B to standard rats of 40 to 60 g. weight suffering from vitamin B deficiency.
3. Assuming that food intake is about 10 g. per head per day.
4. Using Plimmer's figure [33] for vitamin B requirement of human beings—i.e., 1½ times that of the percentage requirement of rats.
5. Average results obtained in recent work by other investigators [24 34] and ourselves.

The results of these analyses are summarised in Table I., which also contains some data obtained by previous investigators on certain yeast products. Wide variations are shown in the composition of yeast preparations made by different methods. These may be due partly to differences in the raw material, and partly to differences in the methods of extraction employed. But in view of these wide variations in accurately analysable constituents, it is not surprising to find even greater difference in the vitamin B content of these yeast preparations, as shown in Table II.

Discussion.

It has already been pointed out by Cramer and Mottram[35] that the white and wholemeal bread problem has suffered much confusion from inaccurate statements on the one hand and the unproven claims of enthusiasts on the other. The facts that have been presented show that there is justification for this view. In the past, studies on the nutritive value of white and wholemeal bread appear to have centred round the questions of the relative protein content and the calorie value. Differences undoubtedly exist, but analysis shows that such differences are too slight to be of real importance. In recent discussions, the importance of the content of vitamin B (and other constituents) of bread, the staple cereal food, has been fully recognised on all sides. Divergence of opinion, however, is encountered on such questions as the adequacy of white bread in vitamin B and how best it may be fortified. Cramer and Mottram have clearly demonstrated that the modern milling processes used in the manufacture of white flour are responsible for a considerable loss of vitamin B amongst other constituents. This decline in nutritive value has been admitted by all serious students of the bread problem since the time of Liebig,[36] who stated that "the whiter the flour the less nutritive value it possesses." But, as previously pointed out, the suggestion has recently been made that any lack of vitamin B in white flour is rectified when the flour is made into bread by the added yeast. This contention has not been verified by the experimental facts. Cramer and Mottram have shown that the highest proportion of yeast normally employed in bread-making will not supply white bread with more than one-seventh of the amount of the vitamin found in good wholemeal bread.

A number of solutions of the problem have been proposed. During the war, for instance, Weill and Mouriquand [37] used an extract of bran in place of the bran itself in making bread. Greig and Curjel [38] employed wheat germ as a source of vitamin B, adding it to zwieback in the proportion of 15 per cent. Such bread was found to be a satisfactory means of protecting the English colonial army against beri-beri. This solution, apparently successful during the abnormal times of war, might not necessarily be satisfactory in peace. In ordinary wholemeal bread the proportion of germ varies from 1 to 2 per cent. This amount supplies only a small fraction of the vitamin B required. If wheat germ is to supply an adequate amount of this factor, it must be used in much higher proportion; for example, Hovis germ bread contains about 24 per cent. This method of enriching bread with its lost constituents is hardly a satisfactory solution. Wheat germ must first be detoxicated before it can be used in bread-making, and is more costly as a source of vitamin B than dried yeast. Moreover, it is economically unsound because, in order to provide this unusually high percentage of germ, a much larger quantity of flour (more than 12 times as much) must be robbed of the vital constituents in the germ.

Cramer and Mottram propose to solve the problem by replacing white by wholemeal bread. In practice, however, a number of difficulties at once arise Amongst these are the questions of appearance, palatability, digestibility, texture, keeping qualities,

price and, last but not least of the difficulties, the conservative attitude of the consumer. It is true that some of these obstacles can be overcome by fine grinding of wholemeal flour and improvements in the methods of baking. But a consideration which appears to have been overlooked by many investigators is the extensive change in the existing milling plant which would be necessary. Serious difficulties arise when the attempt is made to produce a satisfactory wholemeal flour by the modern roller mills in general use to-day in the manufacture of white flour. The total replacement of white bread by wholemeal would probably involve the alteration, perhaps even the scrapping, of much expensive milling plant. Such a contingency would inevitably mean a considerable rise in the price of this staple foodstuff.

In view of these difficulties, a practicable *via media* is offered by the method of adding dried yeast in proper amount to ordinary white flour. An average dried yeast is several times more potent in vitamin B than the fresh yeast employed in bread making. Such a product, used in the proportion of 2 to 4 per cent. of the flour, would yield a bread containing as much vitamin B as is found in the finest wholemeal product (see Table II.). Moreover, from our own experience we can state that a white bread fortified by the addition of dried yeast can be quite palatable and in no way offend æsthetic susceptibilities. Many indeed would not realise that they were consuming anything but ordinary bread. Since dried yeast is a by-product in large industrial processes, supplies are readily and cheaply available. Finally, this method of supplying vitamin B, as well as phosphates and other valuable constituents missing from white flour, necessitates no expensive new plant, nor the scrapping of that already in operation.

Up to this point the use of dried yeast has been considered in a prophylactic capacity only. Often, however, the physician desires to administer larger quantities of vitamin B to make good, as rapidly as possible, a serious deficiency. In such cases yeast extracts appear to be very satisfactory because they can be easily administered in large and controlled doses. They should possess a high potency in vitamin B, varying only within small limits. Commercial extracts may vary in vitamin B potency by several hundred per cent., but our results have shown that a potent yeast extract can be made, under properly controlled conditions, by a simple inexpensive method. The product thus obtained was at least as active in vitamin B as the more expensive marmite. Being in a liquid form, it is very suitable for therapeutic and domestic use.

One or two important provisos should be made. The dried yeast which is to be employed in bread-making should of course be examined for its constituents and specially tested for its content of vitamin B. Our own experiments indicate that the employment of dried yeast, even in high proportions, is free from the danger of introducing toxic constituents such as are found in wheat germ. Another consideration of the first importance is the growing practice of " bleaching " flour. Amongst the chemicals used for this purpose are ammonium persulphate, nitrogen peroxide, nitrogen trichloride, benzoyl peroxide, and chlorine. Apart from the probable inimical effects of these substances on health, which would be cumulative, their presence in bread would serve to lessen through oxidation the amount of active vitamin. From both points of view their use is both unnecessary and undesirable. The best immediate practical way of solving the bread problem, in the present situation, is to add dried yeast to flour.

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INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 15TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week :—Small-pox, 92 (last week, 123) ; scarlet fever, 1977 ; diphtheria, 1021 ; enteric fever, 122 (last week, 108) ; pneumonia, 540 ; puerperal fever, 45 ; puerperal pyrexia, 92 ; cerebro-spinal fever, 6 ; acute poliomyelitis, 17 ; acute polio-encephalitis, 3 ; encephalitis lethargica, 13 ; continued fever, 1 ; dysentery, 6 ; ophthalmia neonatorum, 109. No case of cholera, plague, or typhus fever was notified during the week. The notifications of small-pox are under 100 for the first time for more than two years.

The following counties each notified 3 or more cases of enteric fever :—London, 21 ; Chester, 3 ; Devon, 5 ; Essex, 6 ; Gloucester, 8 ; Huntingdon, 4 (St. Ives) ; Lancaster, 3 ; Norfolk, 5 ; Northumberland, 3 ; Southampton, 8 ; Sussex East, 6 ; Warwick, 3 ; Yorks, East Riding, 5 (Pocklington) ; Yorks, North Riding, 3 ; Monmouth, 3. The total of 122 includes 27 cases of paratyphoid fever, of which 12 were notified in London.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Sept. 18th–19th was as follows :—Small-pox, under treatment 11, under observation 2 ; scarlet fever, 1647 ; diphtheria, 1466 ; enteric fever, 87 ; measles, 101 ; whooping-cough, 237 ; puerperal fever, 13 (plus 7 babies) ; encephalitis lethargica, 70 ; poliomyelitis, 2 ; " other diseases," 20. At St. Margaret's Hospital there were 17 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox (the last quarter has now been entirely clear), 2 (0) from enteric fever, 10 (1) from measles, 2 (1) from scarlet fever, 22 (6) from whooping-cough, 20 (5) from diphtheria, 125 (35) from diarrhœa and enteritis under two years, and 17 (5) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever were reported from Plymouth and Bristol. Of the 9 fatal cases of measles outside London 3 each were reported from Liverpool and Newcastle-on-Tyne, Belfast reporting 10 in the same week. There was a further slight increase in the number of deaths from diarrhœa, of which Liverpool reported 15 ; West Ham, Birmingham, Manchester, Leeds, and Middlesbrough 5 each ; Bristol and Hull, 4 each ; while Glasgow, Dublin, and Belfast reported 14, 9, and 7.

The number of stillbirths registered during the week was 274 in the great towns (corresponding to a rate of 41* per 1000 births), including 55 in London.

* The rate was misprinted 89 for 39 last week.

POST-VACCINAL ENCEPHALITIS.

REPORT OF THE LEAGUE OF NATIONS COMMISSION.

AN important session of the Health Organisation of the League of Nations was held at Geneva from August 22nd to 25th. The report[1] of the proceedings has now reached us. Prof. Ricardo Jorge, Director-General of Public Health Services, Lisbon, presided, and those present were :—

Members of the Health Committee : Sir George Buchanan, Senior Medical Officer, Ministry of Health, London ; Dr. H. Carrière, Director of the Federal Health Service, Berne ; Dr. N. M. Josephus Jitta, President of the Health Council of the Netherlands, The Hague.

Experts : Prof. H. Aldershoff, Director of the State Serological Institute, Utrecht ; Dr. F. R. Blaxall, Government Lymph Establishment, London ; Prof. M. Camus, Director of the Superior Institute of Vaccine, Academy of Medicine, Paris ; Prof. Dr. H. A. Gins, Robert Koch Institute, Berlin ; Dr. H. Mervyn Gordon, St. Bartholomew's Hospital and College and Medical Research Council, London ; Prof. A. Groth, Landesimpfanstalt, Munich ; Prof. G. Sobernheim, Director of the Health Institute of the University, Berne.

The questions considered by the Commission were post-vaccinal encephalitis, and the preparation and preservation of vaccine lymph. The third subject on the agenda was the relationship between the different types of small-pox virus and those of certain human and animal pathogenic viruses, but it was decided to postpone discussion until the problem had been further examined.

A preliminary discussion on *post-vaccinal encephalitis* by a subcommission led to the framing of a report which was adopted by the Commission and is summarised below.

Terminology.—The term "post-vaccinal encephalitis" is used in the report for convenience, without necessarily implying that "post-vaccinal" is considered the equivalent of "propter-vaccinal." Some of the thousands, even millions, of persons who are successfully vaccinated in any given year must fall ill during this period in the ordinary chances of life, and they are no more immune from diseases specially affecting brain and nerves than any other persons. During recent years many countries have experienced a considerable prevalence of epidemic encephalitis (or encephalitis lethargica). The disease has no connexion with vaccination, but it may well be supposed that occasionally persons who have been recently vaccinated would be attacked by it as a matter of chance, like any others. The same consideration applies to chance coincidences between vaccination and attacks of epidemic poliomyelitis. Such rare coincidences, however, do not constitute the "post-vaccinal encephalitis" now under consideration. Encephalitis may occur as a complication of numerous infections, such as measles, or various forms of toxæmia, and it occurs, though rarely, as a complication of small-pox itself. It would be permissible clinically, and perhaps also pathologically, to group all such encephalitis under a single term, encephalitis *post-infectionem*. Vaccination is an infection. It is not implied that post-vaccinal encephalitis is not capable of being classed with, and attributed to, the same ultimate causes as "encephalitis *post-infectionem*," although there are practical reasons for considering it separately and by a separate name at the present time.

Cases in the Netherlands and in England and Wales.

The post-vaccinal encephalitis with which the report deals has become a problem of itself mainly in consequence of the events of the last few years in the Netherlands and England and Wales. In each of these countries the cases which have occurred have been sufficiently numerous and similar to require them to be considered collectively. Their occurrence has led to the realisation that a new, or at least a previously unsuspected or unrecognised, risk attaches to the practice of vaccination. This risk, when taken at its maximum value, is minute in proportion to the vast numbers of normal vaccinations to which the cases of post-vaccinal encephalitis correspond, and it is easy to exaggerate its importance. Nevertheless, it is one whose existence, in these two countries at any rate, has to be recognised, and its meaning considered. In fact, it has in the Netherlands been considered of sufficient gravity to cause the temporary suspension of the administrative measures by which the vaccination of children is secured, while in England the subject has already received the attention of two expert committees appointed by the Ministry of Health, the second of which (the Rolleston Committee) has now presented a comprehensive report,[2] embodying the information and conclusions arrived at by the first or Andrewes Committee, whose work was described to the Health Commission of the League of Nations in 1926.

In the Netherlands, 139 cases of disease of the central nervous system following vaccination were described during 1923 to 1927, of which 41 died. In England and Wales, taking the arbitrary periods dealt with respectively by the Andrewes and Rolleston Committees, 62 cases with 36 deaths occurred between Nov. 14th, 1922, and Nov. 1st, 1923, while a further group of 40 cases occurred between Jan. 1st, 1926, and Sept. 30th, 1927. Of these 40 cases, however, 15 were excluded by the Rolleston Committee on account of their doubtful nature, leaving for consideration 25 cases, of which 12 died, in the second period. The two combined, on this basis, gave a total of 87, of which 48 were fatal, for England and Wales during the two periods under investigation by these Committees.

The clinical characteristics of post-vaccinal encephalitis, as met with in both countries, are quoted from the Rolleston Committee report. Pathologically, the fatal cases have shown diffuse encephalomyelitis, the inflammation being mainly perivascular in type and often accompanied by œdema. The pathological changes in some instances resemble those found in acute disseminated sclerosis, and differ in essential respects from those met with in fatal epidemic encephalitis. The presence of the vaccinia virus in the brain tissue of certain of the fatal cases has also been definitely established. This fact, however, must be considered in the light of modern knowledge regarding the dissemination of this virus after vaccination. The brains were examined at a period after vaccination when it would be anticipated that the brains of many normal vaccinated persons, could they be tested, would equally yield the vaccinia virus.

"*Incubation period.*"—The period which usually elapses between vaccination and the onset of symptoms of encephalitis (the "incubation period") is from 9 to 13 days. The Rolleston Committee found that, out of 125 cases collected from the British and Continental sources, the onset was between the ninth and thirteenth day after vaccination in 94, and the most favoured day was the eleventh.

Age-incidence.—In both countries post-vaccinal encephalitis has occurred more rarely in infants under the age of two years than in older children and in adults.

During the four years 1924 to 1927 in the Netherlands 4 cases occurred among 126,124 vaccinations under the age of two years, as against 130 cases among 462,212 vaccinations between the ages of 3 and 12 ; in other words, 1 case to every 31,531 vaccinations at ages 0 to 2, and 1 case to every 3555 vaccinations at ages 3 to 12. The vaccination figures are based on the doses of lymph issued and not on the actual vaccinations performed ; they are, therefore, an over- rather than an under-statement.

In England and Wales the predilection of the disease for older children has been equally notable, though figures comparable to the Dutch of vaccinations at ages are not obtainable. The vaccinations done by the public vaccinators in England and Wales under the vaccination law of the country are normally limited to the vaccination of infants under two years. But in the English series of 87 cases of post-vaccinal encephalitis referred to above, those under two years of age were only eight in number. During recent years, owing to the prevalence of small-pox, an exceptionally large number of school-children have been vaccinated who had escaped vaccination in infancy, and the

[1] Publications of the League of Nations. Health. 1928. III. 12. C.H. 739.

[2] See THE LANCET, August 4th, 1928, p. 233.

majority of the English post-vaccinal encephalitis cases have occurred among these school-children.

Method of vaccination: source of lymph.—Most of the post-vaccinal encephalitis cases in both countries have occurred in children whose vaccination, to judge from all ordinary signs and cutaneous reactions, has run a normal course. No single method of vaccinating has been exclusively concerned. The American practice of using minimal quantities of vaccine lymph has, up to the present, been so little followed, however, in the Netherlands or in England that it is not possible to ascertain whether in any case encephalitis has followed the use of this method.

Many different vaccine lymphs have been used to vaccinate the cases which developed encephalitis, and no one source of lymph has been proved to be more associated with the occurrence of the disease than another.

The *geographical distribution* of the cases in each country has been wide.

The cases have chiefly occurred in those regions and at those times when organised vaccination of the population was in progress. Nevertheless, it is noteworthy that, both in the Netherlands and in England and Wales, there have been large populous areas in which vaccination has been carried out on a large scale on persons of all ages during the past four or five years without the occurrence of any post-vaccinal encephalitis. On the other hand, in certain rural districts, sometimes in quite small villages or rural communes, local vaccination has been attended by a relatively excessive proportion of encephalitis cases. Striking illustrations of this circumstance have been supplied in the Dutch reports.

Originally in the Netherlands the local distribution of post-vaccinal encephalitis showed a notable degree of correspondence with the local distribution of known cases of epidemic encephalitis (encephalitis lethargica), but this correspondence has not been maintained in the later series of Dutch cases, and has never been established in any of the English series.

In no country other than the two under discussion has the occurrence of encephalitis been on any considerable scale, but cases of the same sort have been reported in 1922 from Portugal (1); in 1924 from Prague (8), from Switzerland (2), and Germany (3); in 1927 from Poland (2), and the United States (4); and in 1928 from British Guiana (1).

Research has so far failed to give any sufficient or generally accepted explanation of the cause or causes of post-vaccinal encephalitis. The questions whether the appearance of post-vaccinal encephalitis can be checked by the habitual use of smaller doses of vaccine, or by the adoption of different methods of vaccination, are being studied in the countries specially affected. It is hoped, however, that the proposals, in the second part of the report, for international expert coöperation in the study of the different viruses allied to vaccinia; of the effect of diluting vaccine lymph; of the use of antiseptics in lymph preparation, and so forth, may prove to be of use, directly or indirectly, to those who are doing research work on post-vaccinal encephalitis.

Cases in Other Countries.

From the international point of view, it is important that further inquiries should be made as to the existence of post-vaccinal encephalitis in countries other than the Netherlands and England and Wales. If, as it appears, the condition is one which occurs with the utmost rarity among infants vaccinated under the age of two years, and if also it is the fact that post-vaccinal encephalitis is similarly of the utmost rarity after revaccination of older children or adults, it is probable that there are many countries in which little or no post-vaccinal encephalitis is likely to occur. In these countries, the great majority of the population is vaccinated in infancy. But, on the other hand, there are certain countries in which, like the Netherlands, primary vaccination at school age is habitually practised, or in which, as in England, large numbers of children of school age or adults are vaccinated for the first time on account of the appearance of small-pox. It is in such instances that the establishment of the negative, after full inquiry and observation, would be of the greatest value as a control to the English and Dutch experience.

It is fallacious to expect these cases to be brought to the notice of the Central Health Authority merely through the ordinary channels of infectious disease notification. This fact may be attributed either to failure on the part of the practitioner to connect the subsequent illness with previous vaccination, or to the fact that the doctor in attendance on the case during the nervous illness is not the one who performed the vaccination. A further complication in the inquiry is the occurrence of transient cases, or cases with indefinite symptoms, which are readily considered by the practitioner to be due only to vaccination. The four cardinal symptoms of the disease (temperature, vomiting, headache, and drowsiness) may each or all occur in course of normal vaccination in a young child.

The possible fallacies of a negative return from either a country or districts in a country are therefore very great, and a statement that cases of post-vaccinal encephalitis do not occur in a given locality can only be of value if made after most careful inquiry on the spot by a competent investigator, who has access to doctors, hospitals, schools, and all other sources of information in the area. Inquiries are to be made with a view to indicating a limited number of countries or regions which would be appropriate for such investigations.

Conclusions.

The facts and considerations which have been before the Small-pox and Vaccination Commission at its present session seem to permit the following conclusions:—

(*a*) The foremost of these is the rarity of cases of post-vaccinal encephalitis, even in the countries specially affected, by contrast with the number of vaccinations. We are in fact concerned with a minimal proportion of them. (*b*) Apparently the matter is not one in which mere coincidence between vaccination and encephalitis can be invoked; in other words, we are not dealing with a merely fortuitous occurrence. (*c*) In our present state of knowledge we must conclude that post-vaccinal encephalitis is a different disease from encephalitis lethargica. The conditions under which post-vaccinal encephalitis has manifested itself in the Netherlands and in England and Wales tend to show that children between 3 and 13 years of age are particularly susceptible, whilst infancy and adult ages are almost wholly exempt. All observations point to the conclusion that the appearance of encephalitis is not connected either with particular strains of lymph or with particular accidents of lymph preparation. (*d*) Passing to the ætiologico-pathological side of the problem, it would appear in our present state of knowledge that the virus of vaccinia of itself cannot be considered responsible for the supervention of encephalitis. Rather it has to be supposed that some unknown factor exists—perhaps bacterial or a filter-passing virus, or a latent virus—which, by means of a reciprocal reaction, determines the occurrence of the accidents in question.

None of the facts considered in this report lead the Commission to the conclusion that there is reason for discontinuing the use of vaccination, which remains the most powerful weapon against small-pox that we possess.

In view of the circumstances associated with the occurrence of nervous complications which, as explained in the first part of this report, are in any case of extreme rarity, the Commission draws attention to the advantage which may result from practising primary vaccination during early infancy rather than at later ages of childhood.

HALF A MILLION FOR HOSPITALS.—To celebrate his seventy-eighth birthday in December next, Mr. Bernhard Baron, the cigarette manufacturer, has created a trust and endowed it with £575,000 four per cent. Consolidated Loan, to be called "The Bernhard Baron Charitable Trust for Hospitals and Asylums for Orphans and Crippled Children." The trust is to endure for 20 years, and the trustees are to apply annually as nearly as possible an equal proportion of the capital and income to the prescribed purposes. Twenty-five per cent. of the money is to be distributed among institutions under Jewish control. Lord Reading is the chairman of the trustees.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Predestination to Medical Study.

AT the opening of the new home of the Cologne Medical Society, Prof. Moritz read a paper on the qualities which predestine men and women to take up medical work. He agreed with the views of the late Prof. Garré, of Bonn, who discerned two types among mankind—the auditive and the visual. The latter have an open eye for the world of phenomena, whereas those of the auditive type form their views from the written or spoken word. Prof. Moritz said he had written, on the one hand, to nearly all the medical professors at the German universities, and, on the other, to professors of theoretical sciences such as history, philosophy, archæology, and mathematics, asking them to let him know what had been their favourite subjects at school. He wanted to know whether in their matriculation examination they had got high marks in natural science, whether they had shown interest in physical experiments, or whether, as a sign of an auditive disposition, they had easily learnt their lessons by heart. The answers showed that the medical professors when schoolboys belonged rather to the visual type than to the other, whilst the professors of theoretical sciences had an auditive make-up. The medical men had done well in physics and chemistry, and had shown a taste for experiment, collecting, and observation. As only 8 per cent. of the medical men did not belong to that type, Prof. Moritz concluded that the born naturalist and medical man early shows his predilection for visible phenomena and for experiments, and this later helps in his medical training.

Scarlet Fever and the Potato.

A Berlin medical man, Dr. Benda, the author of essays on the influence of weather and social conditions on the incidence of scarlet fever, has now been studying the possible relation between scarlet fever and the consumption of potatoes. The disease first became known, he points out, at the time when the potato was originally imported into Europe—namely, in the middle of the sixteenth century—and it remained very rare until the beginning of the nineteenth century when potatoes began to be consumed in larger quantities. In Prussia at the present day, he finds, 68·6 per cent. of the potatoes come from the six eastern provinces, and only 31·4 per cent. from the western provinces, and he thinks it significant that on the average the eastern provinces have a scarlet fever mortality of 2·56 per 10,000, as compared with 1·14 in the west. In the individual provinces he has noted that good potato harvests coincide with an increase in the mortality from scarlet fever, and he is of opinion that the consumption of this vegetable favours the development of scarlet fever, although other factors, such as the weather and the density and social standing of the population, should not be overlooked. In support of this view he points out that in countries where potatoes are cultivated very little or not at all scarlet fever is very rare, and these facts make him suggest that the virus may be present in the tubers. A similar theory has been elaborated in connexion with certain epidemics which have broken out in barracks, asylums, and other institutions after the consumption of potatoes, and which were originally ascribed to solanin poisoning. They are now regarded in some quarters as possibly due to the presence in the potatoes of the toxins of *Bacillus coli*, *B. proteus*, and other micro-organisms.

Chimney-sweeps' Cancer.

Chimney-sweeps' cancer has completely died out in Germany, according to an article written by the secretary of the Chimney-sweeps' Association. Nevertheless, this disease is still mentioned in recent works on occupational diseases, and is included in the schedule to the recent law on compensation for professional diseases, together with lead, mercury, and other forms of poisoning. The writer is of opinion that the progress of hygiene, especially improvement in washing facilities, has contributed to the disappearance of the disease. In England, he says, chimney-sweeps' cancer still exists, but perhaps this is because the soot from English coal is more irritating to the skin than German soot.

Legal Responsibility for the Mistakes of Locum Tenents.

The question whether a medical practitioner may be held responsible for malpraxis by his locum tenent has lately been decided in the affirmative by the High Court of Leipzig. A medical man had been absent on a holiday and had appointed a locum tenent with a fixed salary on condition that he should attend the patients designated to him by his employer's wife. A patient had telephoned to the doctor's house to say that he had broken his arm, and wanted attention. The defendant's wife answered that he would come at once, but eventually sent the locum tenent. As the treatment given was alleged to have had damaging results, the patient brought an action against the medical man because he had suffered at the hands of his representative. After a long law-suit the High Court found for the plaintiff, on the ground that the locum tenent had acted as the agent of the defendant, and the latter as principal must be held responsible for the mistakes made. The defendant had pleaded that the locum tenent, as a medical man, was completely independent in his treatment, but this argument was not approved by the court.

Scarcity of Bodies for Dissection.

Human bodies destined for anatomical studies are somewhat scarce in certain universities. The laws and regulations on the subject differ in the various German states, but as a rule the bodies of unknown persons and of criminals who have died in penitentiaries are taken to the anatomical institutes. In the case of prisoners this does not happen if the relatives declare themselves ready to pay the expenses of burial. The anatomical institute of the University of Jena has now published an appeal to the public to send bodies for dissection; they say that the corpses are not mutilated, students being instructed to spare the feelings of the relatives. It is pointed out that many great men—for instance, the late Prof. Häckel—have left their bodies to the institute, and there is no reason why other people should not follow their example. The offer is made that where the body is sent for dissection, cremation will be done free of charge, a religious service will be held if desired, and the ashes will be sent to the family.

Periodica Medica.

The Association of the German Medical Press has issued a catalogue of medical journals, reviews, and other periodicals with the abbreviations to be used in citations. This catalogue, which is entitled Periodica Medica, includes the full and abbreviated names of 1800 periodicals, and it will now be enlarged by adding the more important journals of the profession abroad. The work has been carried out by Dr. Kunze, librarian of the former Army Medical College.

Enteric Fever in Potsdam.

An epidemic of enteric fever has broken out in Potsdam and its neighbourhood. By careful investigation it has been ascertained that it started in a milkshop where an employee had suffered from so-called influenza but was eventually found to have had enteric fever. Fifty cases have been reported with three deaths. The milkshop was, of course, closed, and the milkman and the other patients isolated in hospital. The epidemic has since made no progress, and it is hoped that no new cases will occur.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Dublin Hospitals.

A DISCUSSION concerning the financial condition of the Dublin voluntary hospitals has been carried on in the *Irish Times* during the past week. It began with an unsigned contribution from a correspondent who had made a careful study of the income and expenditure of five of the smaller general hospitals for quinquennial periods before the war and recently. The five hospitals studied have an aggregate of about 600 beds. The total expenditure for the years 1909–13 was £192,000; for the years 1922–26, £367,000. Some of the expenditure was for new buildings or structural alterations, but the correspondent points out that with the advance of medical and surgical technique such changes become frequently necessary, and the expense may properly be classed as ordinary. The annual expenditure has varied little from 1922 to 1926. The income comes from various sources—pay-patients, subscriptions, dividends from invested funds, grants from the Hospital Sunday Fund, the Corporation of Dublin, the Government, and some payments for special services. Some of these sources are discussed in detail. The payments from patients have increased twelvefold from the one quinquennial period to the other. In 1909–13 a sum of £10,315 was collected from patients; in 1922–26 the amount was £120,258. It may be assumed, therefore, that as far as the hospital itself is concerned hospital abuse in the old sense has disappeared. But there is a tendency for a new abuse to appear. This lies in the fact that there is often a difficulty in obtaining a place for a patient who is not able to contribute to the cost of his maintenance.

Paying Patients.

The correspondent next draws attention to the fact that the recognition in the hospitals of a class of pay-patients has led to a change in the relation of the members of the staff to the patients. Formerly members of the staff invariably gave their services gratuitously to all their hospital patients. Now, in some hospitals, it is becoming the custom for members of the staff to accept fees from those who can afford to pay. It is suggested that this custom may lead in time to the disappearance of nursing homes and the concentration of all patients in general hospitals or in homes attached thereto. The amount of money raised in subscriptions increased from £64,000 in 1909–13 to £76,000 in 1922–26. There was, however, a decline in the case of some hospitals, and the increase is in part due to special appeals in recent years. But, as the correspondent drily remarks, "special appeals are among the recognised methods of obtaining hospital funds." The income from investments has increased from £9000 to £10,000; or, in other words, the actual investments have been increased by about £20,000. The combined overdraft of the five hospitals is about £40,000. The correspondent thinks that if this could be wiped out these hospitals could carry on satisfactorily on the present basis, and approximately balance their budgets. In conclusion, he states that there are not more hospital beds in proportion to the population in Dublin than in other centres, and that every hospital has a waiting-list.

A Plea for State Aid.

This communication has been followed by the publication of interviews with several hospital physicians and surgeons. Sir William Taylor puts in a plea for State aid, though he does not desire State control. He suggests that amalgamation of the smaller hospitals would be advantageous to the public, but it would require a capital sum of roughly £700,000. Sir Thomas Myles suggests that the demand on the Dublin hospitals might be considerably lessened if the country hospitals were fitted to do work of a wider range than at present. Nowadays most of the country hospitals have a staff of only one surgeon, so that work must needs be very limited in scope. Mr. Horace Law draws attention to the tax on hospitals constituted by industrial accidents and by the increasing number of motor accidents. He suggests that workmen should contribute to the hospitals through their trade-unions. Sir John Lumsden, while recognising the necessity of accepting payment for maintenance from patients, emphasises the need for making sure that the poor are not excluded. Every voluntary hospital should reserve a number of free beds. Mr. Louis Cassidy suggests the adoption of a scheme of combined marketing, and puts in a plea for provision for research work in the hospitals. Sir William Wheeler thinks that several of the hospital buildings have outlived their usefulness, and are far behind what might be expected in a university city. He urges that children should be removed from the city hospitals to country air.

Medical Certification for National Health Insurance.

Medical certification of insured persons for sickness benefit has had severe criticism at a recent meeting of the Executive Committee of the Approved Societies' Association. Attention was drawn to figures obtained from the National Health Insurance Commission as to the results of the work of the medical referees in the year 1927. It appeared that 13,395 applications had been made to the Commission to provide a second opinion. Of these, 409 were rejected as unsuitably elected and 581 presented final certificates before examination took place. Of the remainder, 4410 failed to attend for examination, about half of them declaring off benefit and the other half ignoring the summons. The remaining 7993 were examined by the medical referees. In regard to 3200 (40 per cent.) the referees found the claimants not incapable of work, while 4793 (60 per cent.) were found incapable and entitled to benefit. The society officials appear to think that these figures disclosed serious laxity in the issue of certificates. Before arriving at such a conclusion it would be necessary to know what proportion these certificates bore to the total number issued. It is wrong to assume that all who declined to attend for examination by the referee did so because they had been acting in fraud. Many sick people will go without benefit rather than take trouble to get it, and many go to work when they should not. That 60 per cent. of the cases thought doubtful by the society officials which actually came to examination by the referee should have been upheld by him is evidence of fairly accurate certification. It was suggested by the secretary of one society that certificates were sometimes issued without examination. If this is done it is liable to the severest professional censure.

Proposed Change of Unit for Distribution of Payment.

While the approved societies are criticising the system of medical certification from one point of view, the National Health Insurance Commission is proposing to make an alteration which is likely to render the system more open to abuse. When the present system was adopted about 13 years ago it was arranged that the dispensary district should be the unit of distribution of payment. A sum equal to the number of insured persons living in the district multiplied by the agreed capitation rate was assigned to each district, and this pool was then distributed according to the work done to the several practitioners who furnished certificates in that district. The Commission now proposes to substitute the county for the dispensary district as the pool unit, on the grounds that the smaller unit leads to widely divergent rates of remuneration, and that the difficulty and expense of obtaining accurate figures of the number of insured persons in the dispensary districts is very great.

Large or Small Units.

It is somewhat surprising that with 13 years' working of the system the Commissioners and the societies have been unable to get a satisfactory register, showing the dispensary district in which each

insured person resides, compiled. If such a register were prepared the other objections fall to the ground. The Commission has invited all medical certifiers to agree to the proposed change, but, on the other hand, the chairman and secretaries of the Irish Medical Committee have asked certifiers to take no steps until the local medical committees and the Irish Medical Committee have considered the matter. It has to be recognised that the substitution of a large pool area for a small one abolishes important checks on excessive certification. In a dispensary district pool the great bulk of the pool—probably 80 or 90 per cent.—is likely to go to the dispensary doctor in any event. He is unlikely, therefore, to be tempted to issue certificates in excessive numbers. Moreover, where only a few men share in a pool they act as checks on each other, and it would be difficult for one of them to secure an undue share without rousing the suspicion of the others. In a large area such as a county these checks disappear. An unprincipled certifier, if such there be, has the way open to him to act unfairly by the pool by issuing excessive numbers of certificates.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Increase of Bastardy.

Dr. Lajos Neményi has been propounding to the Royal Medical Society the question whether the community would not benefit if the same opportunities for development were given to illegitimate children as to those who are born in wedlock. He does not regard the illegitimate birth-rate as any index of the state of morality. This rate has been rising generally in the years since the war, and in Hungary the proportion of illegitimate children in 1925 reached the relatively high figure of 8·2 per cent. Last year nearly 5 per cent. of the pupils at the State auxiliary schools in Budapest were illegitimate. Examination of the patients in the State asylum at Angyalföld shows that general paralysis of the insane is much commoner among women of this class, which is not surprising in view of the inferiority of the education and discipline which they usually receive as girls. Other forms of mental disease do not seem to occur especially often among the illegitimate, and they do not appear to be degenerate by heredity.

Conservative Treatment of Surgical Tuberculosis by Zinc Sulphate.

A preliminary account has been published by Dr. Nikolaus Hedry of his extensive experiments with zinc sulphate in various forms of surgical tuberculosis —e.g., abscesses, caries, fistulæ, and coxitis. After referring to the increase of surgical tuberculosis due to deplorable economic conditions since the war, he goes on to speak of conservative treatment by sunlight, ultra-violet rays, and heat rays. None of these, however, has proved so helpful as zinc sulphate, which he has been experimenting with since the spring of 1926. A 10 per cent. glycerinated solution is employed, and with this it is possible to get complete sterility in abscesses. The infected tissues shrink under the astringent action of zinc, and no harmful incidental effects have been observed in the course of the treatment, apart from a slight inflammation which accompanies the changes in the tissues. In rare cases the patients have complained of shivering and pains, but these were of short duration. Besides many other lesions, six tuberculous fistulæ were treated by irrigation with 1–5 per cent. sulphate of zinc solution, followed by the application of 15–20 per cent. sticks. In three cases the fistulæ were completely closed, and in two there was a considerable improvement; the remaining one showed no benefit. According to Hedry, the particular advantages of the method are as follows. Sulphate of zinc is highly antiseptic, even in high dilution; it is an efficacious astringent, and has a specially stimulating action upon tuberculous tissues, whereby cold abscesses are transformed into warm ones. Its use causes no untoward consequences in the neighbouring healthy areas, even when a strong solution is employed, and no cumulative after-effects have been noted during the two years during which the method has been adopted on a large scale.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

To be Surg.-Lts.: M. A. Graham-Yooll, J. G. Paley, E. W. Graham, R. G. E. Richmond, H. P. Williams, and H. S. Marks.

Surg. Lt.-Comdr. S. R. Johnston to *Caradoc*, for duty during trials.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub.-Lt. D. S. Buchanan to be Surg. Lt.

Proby. Surg. Sub-Lt. T. C. Larkworthy promoted to Proby. Surg. Lt. and appointed to R.N. Hospl., Haslar, for 28 days' training.

Lt.-Comdr. J. H. Anning to *Pangbourne*, for disposal for training.

Proby. Surg. Sub-Lt. J. D. J. Freeman to *Renown*, for training.

ROYAL ARMY MEDICAL CORPS.

Col. N. J. C. Rutherford retires on ret. pay.

Lt.-Col. and Bt. Col. P. H. Henderson to be Col., vice Col. A. Chopping, to ret. pay.

Lt.-Col. B. F. Wingate retires on retd. pay.

The undermentioned Lt.-Cols., having reached the age limit for compulsory retirement, retire on retd. pay: G. J. Houghton (and is granted the rank of Col.), and C. H. Carr.

The undermentioned Majs. to be Lt.-Cols.: G. B. F. Churchill, F. E. Roberts, and E. G. R. Lithgow.

Maj. T. W. O. Sexton, Reg. Army Res. of Off., relinquishes his appt. under Art. 507 (b) Royal Warrant for Pay and Promotion, 1926.

Lt. C. L. Day is restd. to the estabt.

ARMY DENTAL CORPS.

To be Lts. (on prob.): H. L. Foulkes-Roberts, T. R. Wall, J. A. O'Connor, and H. S. Golding.

ARMY RESERVE OF OFFICERS.

Maj. A. F. L. Shields, from R.A.M.C., T.A., to be Maj.

SUPPLEMENTARY RESERVE OF OFFICERS.

Lt. H. L. Oldershaw to be Capt.

TERRITORIAL ARMY.

Lt. A. A. Eagger (late Gordons) to be Lt.

ROYAL AIR FORCE.

Flight Lt. J. Hutchieson is granted a permanent commission in this rank.

RESERVE OF AIR FORCE OFFICERS.

Flying Officer E. D. Gray relinquishes his commission on completion of service.

INDIAN MEDICAL SERVICE.

Col. H. Boulton to be Maj.-Gen.

Lt.-Col. J. Fuller-Good to be Col.

Majs. to be Lt.-Cols.: W. D. Keyworth, B. Gale, H. H. King, R. E. Flowerdew, and A. J. Symes.

Capt. to be Maj.: H. H. Elliot.

Lt. Bhagwant Singh Nat to be Capt. (provl.).

Temp. Capt. Bhanu Datta Sharma relinquishes his tempy. commn.

NORTH PERSIAN FORCES MEMORIAL MEDAL.

Dr. W. H. Dye, Colonial Medical Services, has been awarded the North Persian Forces Memorial Medal for the year 1927 for his paper, The Relative Importance of Man and Beast in Human Trypanosomiasis, published in the Transactions of the Royal Society of Tropical Medicine and Hygiene (1927 vol. xxi). The medal is awarded annually for the paper on tropical medicine or hygiene that has attained a standard of merit published in any journal during the preceding 12 months by a medical officer, of under 12 years' service, of the Royal Navy, Royal Army Medical Corps, Royal Air Force, Indian Medical Service, or of the Colonial Medical Service.

Correspondence.

"Audi alteram partem."

OBTAINING A SPECIMEN OF SPUTUM.

To the Editor of THE LANCET.

SIR,—In his practical and authoritative article last week (p. 614) Dr. S. R. Gloyne states that it is not uncommon for saliva and stomach contents to be sent to the laboratory as sputum. A negative report may under such circumstances be accepted as valid, when a reliable specimen might be found to contain tubercle bacilli. The issues at stake are of such vital importance that I may be permitted to draw attention to some methods that I have employed for the purpose of obtaining a trustworthy sample.

1. *Coaxing* is often effective and may be practised while gently holding the patient's head down over a basin and urging him to "clear his chest and shoot the phlegm out into the basin," while at the same time giving a good cough one's self for him to imitate.

2. *Inhalation of mustard-oil vapour* is of the greatest value. A few drops of the oil in a six-ounce bottle are slightly warmed over a lamp and the patient is asked to have a good sniff or two from the mouth of the bottle. This rarely fails to induce a cough-reflex, especially if there is any inflammatory or tuberculous affection of the larynx. With this I have often obtained a "positive" report when repeated previous ones had been "negative."

3. *Intralaryngeal injection* of a few drops of warm 1 per cent. solution of bicarbonate of soda with a trace of solution of peroxide of hydrogen, as used for cleansing the larynx, may succeed when the mustard inhalation fails.

4. *Trans-nasal instillation* of similar drops may serve the same purpose and requires no "special" technique. The patient sits with his head thrown back and his mouth open. He is instructed to keep on panting and not to swallow while a few drops of the solution are poured into the nose by means of a simple glass syringe. Sufficient is likely to find its way into the larynx to excite a cough and induce free expectoration. This is a method of great value for the introduction of antiseptic oil into the larynx and trachea.

5. *The laryngeal mirror* may serve for the reception of a patch of sputum if the patient coughs while it is in situ.

6. *Potassium iodide*, in small doses, administered for a few days if not otherwise contra-indicated, will often increase the expectoration and bring up the latent bacilli.

It is obviously in the less advanced cases that these methods are called for.

I am, Sir, yours faithfully,

London, Sept. 25th, 1928. JAMES DUNDAS-GRANT.

A CASE RESEMBLING ADDISON'S DISEASE TREATED WITH PITUITARY EXTRACT.

To the Editor of THE LANCET.

SIR,—I can now report the sequel of this case, published in THE LANCET (1928, i., 79). After having derived great apparent benefit from pituitary extract, the patient left this district for South Wales, taking with her a supply of the pituitary tabloids. A fortnight after the supply was exhausted—so I am informed through a relative—she died. I have seen a copy of the death certificate which states "Tuberculosis of the Suprarenal Capsules," not confirmed by autopsy. This is all the information I have been able to obtain, but it appears to confirm the fact that great benefit may be conferred in Addison's disease by administration of pituitary extract.

I am, Sir, yours faithfully,

Merioneth, Sept. 19th, 1928. E. C. B. IBOTSON, M.D.

DEATHS UNDER ANÆSTHETICS FOR DENTAL OPERATIONS.

To the Editor of THE LANCET.

SIR,—Under this heading you called attention last week to an inquiry by the *Dental Surgeon* designed to reduce still further the number of deaths during dental operations. To my mind a lower percentage of deaths in this type of operation must be looked for along the lines of an improved technique on the part of the anæsthetist. If the following three incontrovertible facts are borne in mind it will be seen how large a responsibility rests with the administrator, and how important it is that he should be sufficiently expert to deal adequately with what may prove to be a very difficult administration :—

1. The operation though previously estimated to be of a trivial character and requiring the maintenance of anæsthesia for only a few minutes, frequently devolves itself into a much more arduous affair, requiring a tranquil anæsthetic period of possibly half an hour.

2. In so many cases a partial or even complete obstruction of the upper air passages occurs at some stage of the operation, and in the vast majority this obstruction is brought about by : (*a*) the gradual and increasing collection of blood at the back of the throat ; (*b*) the necessary manipulations of the operator's fingers in the mouth pressing back the tongue ; (*c*) the extraction of a difficult tooth in the lower jaw, entailing as it so often does undue depression of the chin. The dental surgeon is fully conversant with conditions (*a*), (*b*), and (*c*), and has been rather brought to believe that a "rush policy" answers best—i.e., to continue operating until the last possible moment, knowing from unhappy experience that should he be compelled to desist the chances are extremely remote that more favourable conditions will supervene, as upon his resumption a restless patient may still further increase his difficulties.

3. The method of administration chosen frequently necessitates the reapplication of a closed ether inhaler or the dropping of chloroform on an open mask, owing to the patient's partial return to consciousness. In either case the process of reinduction in an oftentimes restless and cyanotic subject choked with his own blood is fraught with danger, and is to be condemned.

It seems to me, therefore, that the lessening of the anæsthetic risk must be looked for along the lines of a better understanding and firmer handling of the issues involved in the above three factors. With regard to (1) all dental operations in which a general anæsthetic is required should automatically (from the anæsthetist's point of view) be relegated to the same class as other major operations performed upon the mouth and which, by their nature, are likely to give rise to interference with the upper air passages. Only by a frank recognition of this point shall we be able to obtain the same pre-operative routine care and attention in the preparation of the patient as obtains in the other cases under this category. All the well-known arguments cited in favour of preliminary hypodermic medication with morphine and atropine apply with especial force in prolonged anæsthesia for dental operations, and the exhibition of these drugs should be part of the routine treatment.

With regard to (2) and (3) I have employed the following technique with a reasonable freedom from anxiety and with no fatality in well over 1000 cases of multiple extractions : induction by gas-ether or ethyl-chloride-ether sequence with a Clover's inhaler. After induction has been completed, usually in two or three minutes, a further three minutes or so is never wasted in continuing with the closed apparatus, until a condition of "stable anæsthetic equilibrium" has been established. A change-over can now be quickly made to a Shipway's inhaler ; the Shipway has been previously connected up with an oxygen cylinder, and the oxygen flow so regulated as to drive over sufficient anæsthetic vapour as previous experience has deemed sufficient to maintain anæsthesia. The narrow efferent rubber tube of the Shipway is wriggled well back to the posterior nares and retained in place by a metal clip attaching it to the ala nasi. Anæsthesia can now be prolonged indefinitely by the judicious administration through the nasal tube of either pure ether, ether-chloroform, or even pure chloroform

without altering the uniform flow of oxygen. Cyanosis should rarely take place owing to the relatively large proportion of oxygen passing over; this latter factor enables a temporary obstruction of respiration to occur without any change of colour on the part of the patient. The operator need never be hurried by the thought of the patient's impending return to consciousness, and in consequence is not so reluctant to allow the anæsthetist to keep the operating field reasonably free from blood, with undoubted advantage both to himself and the patient.

One last word: It cannot be too strongly emphasised that no extraction should be continued with in the presence of an even moderate degree of duskiness; all operative interference should be postponed until the normal colour has been restored.

I am, Sir, yours faithfully,

ARTHUR V. BOYALL.

Minehead, Somerset, Sept. 24th, 1928.

THE LATER RESULTS OF PARTIAL GASTRECTOMY FOR GASTRIC AND DUODENAL ULCER.

To the Editor of THE LANCET.

SIR,—Mr. Flint criticises me for saying that "in our experience gastro-enterostomy is the commonest gastric disorder to-day" in view of the fact that I had given figures showing that duodenal ulcer was a still more common condition. But surely duodenal ulcer is a disease of the duodenum and not of the stomach. I have had many cases of gastro-jejunostomy undone in the absence of anastomotic ulcer in order to overcome more or less severe symptoms resulting from the disordered function caused by the operation, which had generally, though not always, been performed for an ulcer. I may add that in several cases the secondary operation was performed by a distinguished Leeds colleague of Mr. Flint.

There is now abundant evidence that duodenal ulcers rarely, if ever, develop in the absence of what I have called the hypersthenic gastric diathesis. This condition is still present after a duodenal ulcer has healed, whether as a result of medical treatment, a gastro-jejunostomy or partial gastrectomy. It is for this reason that none of these measures is likely to lead to *permanent* freedom from symptoms unless the patient follows a suitable régime for the rest of his life. Mr. Lake is asking for trouble if he allows his patients to eat ordinary food, even after six months. That is why I suggested that he would find the last results of his operations very different from what he calls the "late results"—i.e., the results after an interval of only one to five years. I have seen several cases of secondary ulceration after partial gastrectomy and have collected over a hundred from the literature.

Mr. Lake asks what I could suggest as an alternative to gastrectomy for "those cases in acute agony who have already had a succession of medical treatments with almost immediate recurrence." My answer is that there should be no such cases. The acute agony should disappear within 48 hours of beginning treatment, and if this is continued till the ulcer has really healed and not simply until the symptoms have disappeared, if all septic foci are eliminated, and if a proper régime is followed afterwards, the risk of recurrences is small. When they do occur they are far more amenable to treatment than the disasters which may follow gastric operations. Moreover, the mortality is nil, compared with Mr. Lake's mortality of 10 per cent. after partial gastrectomy for ulcer.

It is true that men and women of the labouring class do not come to New Lodge Clinic, but they come to Guy's as often as to Charing Cross. If Mr. Lake will send me his next three cases of the kind to Guy's, I should greatly value the opportunity of demonstrating to him my alternative to partial gastrectomy.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, Sept. 24th, 1928.

THE NATURE OF THE ROUS TUMOUR.

To the Editor of THE LANCET.

SIR,—A leading article last week states that "the essential similarity between the reaction of the Rous tumour to irradiation and that of true mammalian new growths is evidence in support of the fundamental similarity of these two types of neoplasms." Surely the experiments referred to in this article show some striking *dissimilarities*. Mottram irradiated small Rous tumours in fowls with doses which he calculated would cause their ultimate disappearance. When the tumours had begun to regress, they were removed and dried in vacuo, but when reinoculated into fowls produced tumours. Could any true mammalian new growth have stood such treatment?

Although we gave Rous tumours in vitro five times the dose of X rays lethal to mouse, rat, and human tumours of various types, it had no apparent effect on the subsequent growth; surely this points to some dissimilarity in the Rous tumour. Mottram found that a small nodule of Rous tumour in a fowl could be made to disappear if it was exposed to a certain dose of irradiation, while we found that a dose of X rays lethal to other tumours had apparently no effect on an established Rous tumour in a chicken. Under the conditions of Mottram's experiment the surrounding normal tissues would get a dose of irradiation not very different from the tumour cells; under our conditions they would get only a small fraction of this dose.

In the *British Journal of Radiology* (1927, xxxii., 289) we published experiments showing the deterrent effect which suitable doses of X rays on the skin of the rat had on subsequent tumour-growth, when the tumour cells received no irradiation whatever.

We are, Sir, yours faithfully,

S. RUSS,
G. M. SCOTT.

The Middlesex Hospital, W., Sept. 24th, 1928.

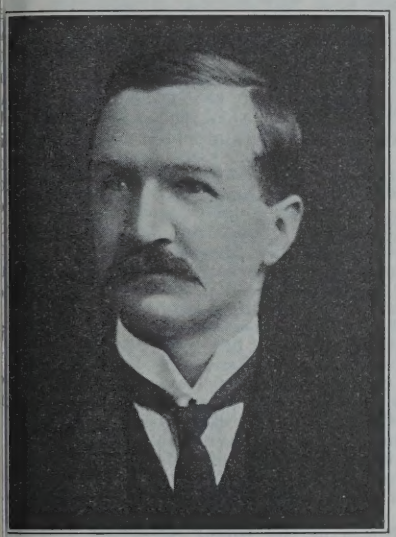
IMPORTATION OF DRUGS AND CHEMICALS.—Under Section 10 (5) of the Finance Act, 1926, the Treasury may by order exempt from the duty imposed by the Safeguarding of Industries Act, 1921, any article which is not made in any part of His Majesty's Dominions in quantities which are substantial having regard to its consumption in the United Kingdom, provided that there is "no reasonable probability that the article will within a reasonable period be made in His Majesty's Dominions in such substantial quantities." The Board of Trade has under consideration the renewal of the exemption which has been accorded to the following substances and articles: R. acetone; acetone (fermentation); synthetic acetone; anhydrous hydrocyanic acid; lactic acid which satisfies the requirements of the British Pharmacopœia; oxalic acid; amidopyrin (pyramidon, dimethyl-amidoantipyrine); ammonium perchlorate; barbitone (veronal; malonal; malourea; diethyl barbituric acid; diethylmalonylurea; hypnogen, deba); bromural (dormigene); crude cocaine; dial (acid diallyl barbituric); didial (ethyl morphine diallyl barbiturate); elbon (cinnamoyl para oxyphenyl urea); ethylene bromide; ethylene glycol (glycol; alcohol ethylene); eukodal; furfurol; glycol ethers; guaiacol carbonate (duotal); hydroquinone; integrators (planimeter type); R. lead acetate; lead tetraethyl; lipoidin; lithium carbonate; lithium hydroxide; metaldehyde; methyl chloride; methyl sulphonal (diethylsulphonemethylethylmethane, trional); nickel hydroxide; papaverine; phenacetin (acetparaphenetidine); phenazone (antipyrine; phenyldimethylpyrazolone; analgesin; anodynine; dimethyl oxychinizin; phytin; piperazine (diethylene-diamine; dispermin); planimeters; R. potassium chlorate; potassium guaiacol sulphonate (thiocol); R. potassium hydroxide (R. potassium caustic; R. potassium hydrate); R. potassium permanganate; pyramidon-veronal; quinine ethyl-carbonate; radium compounds; resorcin (resorcinol); salol (phenyl salicylate); styracol (guaiacol cinnamate); sulphonal; synthalin; urea (carbamide); and vanadium-silica compounds specially prepared for use as catalysts for sulphuric acid manufacture. Any communications with respect to these matters should be addressed to the Principal Assistant Secretary, Industries and Manufactures Department, Board of Trade, Great George-street, London, S.W. 1, before Oct. 18th.

Obituary.

ROBERT KNOX, M.D. EDIN., M.R.C.P. LOND., D.M.R.E. CAMB.

BY writing, by organisation, and by example Dr. Robert Knox played an important part in the development of radiology in this country. His death, which occurred in London on Sept. 21st, will be generally regretted by the profession, and especially by those who knew him as a colleague and friend.

Born at Leith in 1868, he received the same name as his father. He was sent to the University of Edinburgh, and graduated there in medicine when 24 years of age. After acting for a time as demonstrator of anatomy in the New School of Medicine at Edinburgh he came south to Guy's Hospital, taking the English conjoint diploma in 1893. A year or two later he settled in general practice at Highgate, but continued his hospital work at the Great Northern Hospital where he first held appointments in the pathological and medical outpatient departments. He began to study radiology within a few years of Rontgen's discovery, and gradually radiological work began to absorb more and more of his time and interest. His first radiological or rather "electrical" appointment was to the Great Northern Hospital, and in 1909 he began his long series of contributions to the literature of the subject. In 1912 he was appointed director of the electrical and radiotherapeutic department of the Cancer Hospital, and began to specialise at Harley-street as a radiologist. In the following year he succeeded Dr. (afterwards Sir) Archibald Reid as radiologist to King's College Hospital. Soon afterwards he followed Dr. F. H. Low as honorary secretary of the Rontgen Society, being also elected to the Council of the Electrotherapeutic Section of the Royal Society of Medicine. Knox was a ready and rapid writer with a good sense of proportion and an eye to effective illustration. His text-book, 'Radiography, X Ray Therapeutics, and Radium Therapy," which appeared in 1915 within one cover, was the first comprehensive treatment of the whole subject by a British author. It was an immediate success, which was justified by Dr. Knox's scrupulous care in keeping later editions of the book in touch with every new development. His other literary work included the chapter on Radium Therapy in Eden and Lockyer's Gynæcology and papers in many periodicals, whilst for years past he has been editor of the *British Journal of Radiology* and its predecessor.



DR. KNOX.

His chief radiological researches were done at the Cancer Hospital, Fulham. In the laboratories attached to this department some new device was always being worked at; in radio-diagnosis he was especially interested in developing means whereby accurate information of the heart's movements might be got, and he did a great deal to encourage serial radiography. On the radio-therapeutic side he made a definite attempt to reduce the damage to the skin which may occur when depth doses are administered, and here again by his method of rotational focus a step forward was made. An account of some recent work on the reactions of normal and pathological tissues, carried out in association with the British Empire Cancer Campaign, was given to the Second International Congress of Radiology, held at Stockholm last July.

Dr. Knox helped to found the British Association of Radiology and Physiotherapy, and with Sir Archibald Reid was also the founder of the British Institute of Radiology. He was president of the former and also of the Rontgen Society, and when the Rontgen Society was recently amalgamated with the Institute he was able to give much help to those responsible for the change. Dr. George Batten, who followed Knox as president of the Rontgen Society and the Section of Electrotherapeutics of the Royal Society of Medicine, writes of him that he was a ruling spirit, if not *the* ruling spirit, in these associations. "The Council and members," writes Dr. Batten, "as well as his colleagues at the hospitals, quickly learnt to appreciate Robert Knox for his broadmindedness, thoroughness, and ballast, and we all learnt to love this quiet, modest, efficient man. He brought to bear on every problem of patient or policy a friendly dignity which produced calm and good results."

Another colleague writes of him that he was always ready to recognise the help received from his staff, members of which, attracted by his personality, often gave their services without payment.

Abroad Knox was probably the best-known British radiologist, and he was elected to honorary membership of several foreign societies, including the American Roentgen Ray and Radium Society. It is not too much to say that it was owing to his initiative that the first International Congress of Radiology was held in London in 1925. During the war he was in charge of the X ray department of the 4th London General Hospital, holding a Territorial commission, and for many years was honorary radiologist to the Queen Alexandra Hospital, Millbank. He had recently been acting in an advisory capacity to the War Office and to the Ministry of Health.

He leaves a widow, Dr. Alice Vance Knox, a daughter, and a son Robert, who is studying medicine at St. Bartholomew's Hospital.

ARCHIBALD DUNBAR WALKER, M.D. EDIN.

WE have to announce that Dr. Dunbar Walker, who was for more than 43 years in active practice in the London area, died at his home in Hampstead on Sept. 21st, at the age of 81. His father was a surgeon in the service of the East India Company, and Dr. Walker was born in India. He received his medical education at the University of Edinburgh, where he graduated in 1861 and gained his doctor's degree in 1871. Soon after qualifying he went out to Palestine to undertake medical mission work, spending also some time in Egypt. On his return to this country he took up general practice in Ladbroke-grove, being appointed medical officer to the North Kensington and Kensal-town Provident Dispensary. After 25 years in this district he moved to Notting Hill, where he remained actively at work for another 18 years. Dr. Walker was the author of "Egypt as a Health Resort" and "The Parents' Medical Note Book," besides a number of contributions to the medical press. His sister was Dr. Eliza Walker Dunbar, who long practised in Clifton and died two years ago, and his son is Lieut.-Colonel N. Dunbar Walker, R.A.M.C., another member of the family who sustains its medical tradition.

ALICE DEBORAH HICKLING, M.B.E., L.R.C.P. EDIN.

Mrs. Hickling, who has died at Hong-Kong, was a daughter of the Rev. James Sibree and was born in the Madagascar mission field in 1876. She entered Walthamstow Hall, Sevenoaks, as a young child, and

went up to Oxford in 1894, qualifying from the London School of Medicine for Women in 1901 with the Scottish conjoint diploma. After some two years' experience as resident medical officer at the Sanatorium for Consumption at Clare, in Suffolk, she went out to Hong-Kong to join the staff of the Alice Memorial Maternity Hospital. Shortly afterwards she became Government inspector of midwives in the colony, a post which she held for 20 years. During the war she was medical officer to the Voluntary Aid Detachment in Hong-Kong, and for the last 12 years of her life had been medical officer to the Victoria Nursing Division there. For her services to the colony, in these and other capacities, she was made a Member of the Order of the British Empire, and she was also an honorary serving sister of the Order of St. John of Jerusalem. Dr. Hickling served from 1918 to 1920 as acting medical officer of health for Hong-Kong, and in 1923 was appointed Government assistant medical officer in charge of native hospitals. She married Mr. C. C. Hickling, son of the Rev. James Hickling.

Medical News.

LONDON MEDICAL EXHIBITION.—From Monday, Oct. 1st, till Friday, Oct. 5th, from noon till 6 P.M., at the Central Hall, Westminster, the London Medical Exhibition will be open to members of the medical profession, and any medical man who has not received a card of admission can obtain one on application to the Secretary, 194–200, Bishopsgate, or at the Central Hall during the exhibition week. This exhibition grows in importance and magnitude every year, and it is expected that the forthcoming display of the latest results of research and of aids to medical and surgical treatment will be the largest yet held. Organised by the management of the Seventeenth International Congress of Medicine, 1913, and of the Fifth Clinical Congress of Surgeons, 1914, it aims at presenting a comprehensive survey of drugs and surgical appliances of practical value to the practitioner, while it also enables him to keep in touch with the latest developments of medical and surgical achievement. A large reception room and a refreshment room with orchestra are provided for the use of visitors.

ROYAL SANITARY INSTITUTE.—The Fortieth Congress and Health Exhibition of the Institute will be held at Sheffield from July 13th to 20th, 1929.

Sir John William Thomson-Walker, F.R.C.S., has been appointed a Deputy-Lieutenant for the County of London.

UNIVERSITY OF LONDON.—A course of lectures on Smoke Pollution of the Air and Public Health will be given at University College, Gower-street, London, W.C., by Dr. John Owens, at 5.30 P.M., on Nov. 2nd, 9th, and 14th.

UNIVERSITY OF LONDON MEDICAL GRADUATES SOCIETY.—It is proposed to hold a dinner for members of this society in London towards the end of October, and it is expected that a dinner for members in Birmingham and one for members in Leeds will be held in November. All medical graduates of the University of London are eligible for membership, and nearly 300 life members have so far been enrolled. Applications should be sent to the hon. secretaries of the society at 11, Chandos-street, London, W.1.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The Harben lectures for 1928 will be delivered at 4 P.M. on Oct. 23rd, 26th, and 30th, in the Lecture Theatre of the Institute, 37, Russell-square, W.C., by Dr. Arthur T. Henderson, lecturer in medicine in McGill University, Montreal, whose subject will be Studies in Asthma and Related Diseases. No tickets of admission will be required. A course of lectures on Industrial Diseases will be held at the Institute in the near future.

GERMAN CAMPAIGN AGAINST RHEUMATISM.—The third meeting of the Deutsche Gesellschaft für Rheumabekämpfung will be held under the chairmanship of Prof. Dietrich, at Berlin, from Nov. 4th to 7th. The subject of discussion will be the Clinical Features of Rheumatic Diseases, and there will be lecture-demonstrations at various clinics on the relation of these diseases to the different branches of medicine. The address of the society is Fraunhoferstrasse 16, Charlottenburg, Germany.

MEDICAL RESEARCH COUNCIL: NEW OFFICES.—From Oct. 1st the administrative offices of the Medica Research Council, hitherto at York-buildings, Adelph will be at 38, Old Queen-street, Westminster, London, S.W. (Telephone, Victoria 5027). The offices of the Industria Fatigue Research Board will also be at the new address.

LARGE BEQUEST TO MANCHESTER ROYAL INFIRMARY This hospital has benefited to the amount of £36,000 fron a bequest by the late Mr. John Whewell Simpson, o Keswick, a director of the Bleachers' Association. This i the largest individual legacy which it has received fo more than 50 years.

SALISBURY INFIRMARY LEAGUE.—The membershi of the Salisbury and District Infirmary and Hospital Leagu has increased so rapidly that it has been decided to incor porate it as a limited company without capital tradin without profit. When the League was reorganised in th spring of 1922 there were 46 centres of collection and 8 collectors; there are now 280 centres of collection, 61 collectors, and over 50,000 members. In 1914 the Leagu handed £76 to the infirmary; last year it paid over £7509

WELSH NATIONAL MEDICAL SCHOOL.—We noted in THE LANCET of July 28th last that students preparin for degrees and diplomas other than those given by th University of Wales, could not be accepted for courses o instruction in the final subjects. Considerable economi hardship is being caused to students in their fourth yea who might not have taken up the study of medicine ha they not felt assured that they could pursue it while livin at their homes. Moreover, it may not be easy to fin vacancies at medical schools for students who hav done their preliminary work elsewhere. The situation ha arisen quite independently of the dispute as to the futur status of the Welsh National Medical School, which is nov settled in so far that a draft charter establishing it as a separate school of the University has been adopted by th parties concerned and submitted to the Privy Council Unfortunately for the prosperity of the school, however certain members of the staff of the Cardiff Royal Infirmary have resigned their position as clinical teachers, thu diminishing the number of beds available for instructio to such an extent that the University of London and th Conjoint Board have been compelled to withdraw recognitio of the school as a teaching centre. Joint representatio of the case for the students has been made by the parent concerned to the Board of the Royal Infirmary with n effect. Opposition to the unit system is the alleged caus of the resignations.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Oct. 2nd.—8.30 P.M., ORTHOPÆDICS. Presidential Address, Mr. Naughton Dunn: The Surgery of Muscles and Tendons in Relation to Infantile Paralysis. (To be followed by discussion.)

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Remarks by the President, Dr. Herbert Spencer. Paper—Sir D'Arcy Power: The Beginnings of the Renaissance of English Surgery. Members are invited to bring objects of historical interest for exhibition at the meetings of this Section.

THURSDAY.—8.30 P.M.: UROLOGY. Dr. Oswald Swinney Lowsley (New York): Perineal Prostatectomy (with cinematograph demonstration). Members of the Section of Surgery are specially invited to attend.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

FRIDAY, Oct. 19th.—5 P.M., Sir Arthur Keith: Problems in Human Anatomy which arise out of the identification of a skull attributed to Lord Darnley—Demonstration, illustrated by specimens.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 1st, to SATURDAY, Oct. 6th.—BETHLEM ROYAL HOSPITAL, St. George's-fields, S.E. Tues. and Sat. at 11 A.M.: Lecture-Demonstration on Psychological Medicine. ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Lecture-Demonstration by Dr. C. B. Heald on Wed., on Treatment by Electro-Therapy, at 5.15 P.M.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Oct. 1st.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Simmonds: Surgical Out-patients.

TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases (Demonstration). 2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Dr. Ironside: Medical Out-patients. 2 P.M., Mr. Bishop Harman: Eye Department.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.

SATURDAY.—9 A.M., Mr. Vlasto: Operation on Throat, Nose and Ear. 9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Diseases of Children.

Daily 10 A.M. to 5 P.M., Saturdays 10 A.M. to 12 noon. Medical and Surgical In-patients and Out-patients. Operations, Special Departments, Anæsthetic Course.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Oct. 1st.—2.20 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Ear, Nose and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases. Clinics. Operations.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Oct. 4th.—4 P.M., Dr. Cockayne: Cretinism.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Oct. 2nd.—3.15 P.M.: Sir Thomas Horder: Some Functional Diseases of the Heart and Their Treatment.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

MONDAY, Oct. 1st.—1.30 P.M.: Examination of the Pharynx.

WEDNESDAY, Oct. 3rd.—1.30 P.M.: Examination of the Larynx.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

THURSDAY, Oct. 4th, at 5 P.M., Dr. J. H. Stowers: Introductory.

EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E.

WEDNESDAY, Oct. 3rd.—4 P.M.: Clinical Demonstration. Free to Medical Practitioners.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Oct. 2nd.—4.15 P.M., Dr. R. S. Paterson: X Ray Work in Diseases of the Urinary Tract.

FRIDAY.—4.15 P.M., Dr. C. H. Melland: Diagnosis, Prognosis, and Treatment of Pernicious Anæmia.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Mill-street, Manchester.

THURSDAY, Oct. 4th.—3.45 P.M., Dr. W. J. S. Reid: Diseases of Sympathetic Nervous System.

Appointments.

THOMAS, G. R. SEAGER, M.B., B.Chir. Camb., has been appointed Surgeon to the Southampton Borough Police Force.

Bolingbroke Hospital, S.W.: THOMPSON, JOHN H., M.B. Lond., F.R.C.S. Eng., Resident Medical Officer; MORPHY, P. D., *M.C.*, M.B. Glasg., House Surgeon.

Queen Charlotte's Maternity Hospital: HEGGS, G. B. M., M.R.C.S., L.R.C.P. Lond., Senior Resident Medical Officer; COX, A. RAYMOND, M.R.C.S., L.R.C.P. Lond., Assistant Resident Medical Officer.

Certifying Surgeons under the Factory and Workshop Acts: WALKER, J. A., M.B., B.S. Lond. (Poole); MILLAR, G., M.B., Ch.B. Edin. (Crook, Durham).

Vacancies.

For further information refer to the advertisement columns.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—H.S. Also Asst. H.P. Each at rate of £100.

Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.

Cardiff Royal Infirmary.—Hon. Asst. Surg. to Ear, Nose and Throat Dept.

Derby, Derbyshire Royal Infirmary.—Asst. H.S. and Cas. O. At rate of £150.

Doncaster Royal Infirmary.—Third H.S. At rate of £150.

Gloucester, Standish House Sanatorium, Stonehouse.—Asst. M.O. £250.

Greenwich Metropolitan Borough.—M.O. for Maternity and Child Welfare Work. £600.

Hampstead, General and North-West London Hospital, Haverstock-hill, N.W.—H.S. Also Cas. M.O. and Cas. Surg. O. Each at rate of £100.

Hampstead Hospital for Children, College Crescent, N.W.—Res. M.O. At rate of £100.

Hospital for Consumption, &c., Brompton, S.W.—H.P. At rate of £50.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, W.—Res. H.S. At rate of £75.

Ilford Emergency Hospital, Essex.—Jun. H.S. £90.

Jersey General Hospital and Poor-law Infirmary.—Res. M.O. £200.

Lanark, Infectious Diseases Hospital and Tuberculosis Sanatorium, Roadmeetings, Carluke.—Res. Phys. £350.

Leeds City.—Asst. M.O. for Maternity and Child Welfare. £600.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Liverpool, Eye and Ear Infirmary, Myrtle-street.—H.S. £100. Also Hon. Asst. Surgeon to Ear, Nose and Throat Department.

L.C.C. Mental Hospital Service.—Eighth Asst. M.O. £300.

London Temperance Hospital, Hampstead-road, N.W.—Res. M.O. At rate of £175. Cas. O. At rate of £120. Also H.P. At rate of £100.

Macclesfield General Infirmary.—Res. H.S. £180.

Manchester, St. Mary's Hospitals.—Four H.S.'s. Each at rate of £50.

Mauritius, Port Louis.—M.O.H. £900.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Sen. Res. M.O. At rate of £140.

Northampton General Hospital.—Asst. H.S. to Ear, Nose and Throat Dept. At rate of £150.

Norwich, Norfolk and Norwich Hospital.—H.S. and Cas. O. Each £120.

Nottingham, General Hospital.—H.P. At rate of £150.

Nuneaton Borough.—Asst. M.O.H. £600.

Paddington Green Children's Hospital, W.—H.S. At rate of £150.

Prince of Wales's General Hospital, Tottenham, N.—H.S., Special H.S., and H.P. Each at rate of £120. Also Jun. H.S. and Jun. H.P. Each at rate of £90.

Queen's Hospital for Children, Hackney-road, E.—Physician-in-Charge Skin Department.

Royal Chest Hospital, City-road, E.C.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.

Royal Free Hospital School of Medicine for Women, W.C.—Res. Asst. Pathologist. £150.

Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. Four Surg. Regs. Each £105.

St. Andrew's Hospital, Dollis-hill, N.W.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £120 respectively.

St. John's Hospital, Lewisham, S.E.—Res. Cas. O. At rate of £100.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—H.S. At rate of £75.

Shanghai Municipal Council, Public Health Dept.—Second Asst. Commissioner of Public Health (Hospitals). £650.

Southampton, Royal South Hants and Southampton Hospital.—Jun. H.S. Also Cas. O. At rate of £130 and £120 respectively.

Southern Rhodesia Medical Service.—Govt. M.O. £500 to £600.

Stoke-on-Trent, North Staffordshire Infirmary, Hartshill.—Hon. Asst. Aural Surgeon.

Ventnor, Royal National Hospital for Consumption, &c., Isle of Wight.—Jun. Res. M.O. At rate of £300.

Warrington, County Mental Hospital, Winwick.—Asst. M.O. £350.

Wolverhampton, Wolverhampton and Staffordshire Hospital.—Two Asst. H.S.'s. Each at rate of £125.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Chaddesley Corbett and Halesowen (Worcestershire), Plymstock (Devon), and Hirwain (Glam.).

Births, Marriages, and Deaths.

MARRIAGES.

BINNS—O'SULLIVAN.—On Sept. 19th, at Haverstock-hill, N.W., Raymond Thomas Binns, M.B., B.S., to Anna Mary O'Sullivan.

HALE-WHITE—GOSDEN.—On Sept. 20th, at St. Anne's Church, Eastbourne, Dr. Reginald Hale-White, to Vera, daughter of Mr. and Mrs. John Gosden, of Eastbourne.

MCLAGGAN—ADAMS.—On Sept. 22nd, 1928, at Hampstead, John Douglas McLaggan, F.R.C.S., to Elsa Violet Adams, M.B., B.S.

DEATHS.

BUCHANAN.—On Sept. 23rd, at Westcliff-mansions, Eastbourne, Robert John Bertran Buchanan, late Captain R.A.M.C., aged 48.

KNOX.—Suddenly on Sept. 21st, 1928, in his 61st year, Robert Knox, M.D., C.M., M.R.C.P., M.I.E.E., of 38, Harley-street, and 15, South-grove, Highgate, N.6.

WALKER.—On Sept. 21st, at Maresfield-gardens, N.W., Dr. A. Dunbar Walker, M.D., aged 81.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE VISUAL DIAGNOSIS OF DISEASE.*

By E. H. R. Altounyan, *M.C.*, M.D. Camb.,
ASSISTANT SURGEON TO THE ALTOUNYAN HOSPITAL, ALEPPO.

When man first cast a medical eye upon his fellow being, he was faced with a body essentially opaque to light; a body covered with a slippery skin, bossed with bony promontories and with wide stretches of soft and billowy tissue, the few presenting orifices being narrow and leading into cavities uniformly dark and mysterious. Against this body were launched the sustained and tireless efforts of generation after generation of physicians. Their hands took on the delicacy of an insect's antennæ, their ears became trained to catch the softest flutter, and, above all, their eyes became gimlets, capable, in the case of the masters, of penetrating layer after layer to reveal the hidden cause, to expose the secret trouble. With the enhancement of vision came the power to store a series of bright correlated pictures in the mind, capable, like the modern film, of instant and accurate release. With this, too, came the capacity to present in words what the eye had seen, an art which culminated, perhaps, in the clinical teaching of Trousseau, and his great pupil, Dieulafoy. But still the body remained opaque and largely dark.

Domination by the Laboratory.

The rise of the laboratory, shifting the focus of attention away from the living body, ushered in a new era, which must surely be regarded as one of the twilit ages of medicine. As a student, I was just in time to witness the tail end of the darkest phase. Clinicians of international reputation seemed at the mercy of the "lab. boy," who, issuing from a musty and obviously untidy room, removed as far as possible from all contact with living patients, would pronounce fearlessly that this was syphilis and that tubercle, while the other was nothing at all. The issue of this lamentable controversy was not a little confused by the frequent clerical errors of a new and understaffed department, and by the number of dogmas proclaimed by the "test-tube wizards," which had subsequently to be withdrawn. Chaos, indeed, seemed to be just waiting round the corner. I speak not as a scoffer but as one who has served his apprenticeship in the laboratory, and has tasted the joys of this, the most sublimated form of our medical thought. All this is now past history, and the laboratory, after its dastardly attempt to usurp the kingship, has taken its rightful and honourable place. Still the immense, growing complexity of medicine tended, and is still tending, to divide and shift responsibility, to breed callousness and gross ignorance, to promote a narrow and sometimes utterly ridiculous point of view, which impeded knowledge and harmed the patient. It is for these reasons that one must welcome the coming of the next phase which even now perhaps is actually in full flower, this period which will surely be known to succeeding generations as the Age of Vision, the Age of Light. Once more the physician has been given the means to learn much by direct personal observation.

For everywhere over the horizon have appeared specialists, brandishing in their hands tubes; tubes short and long, tubes thick and thin, tubes straight and curved, and each and every one having at one end a small bright light. Thus armed, these gentlemen proceeded, and are at this moment still proceeding, to enter and expose every important region of the living body, while the surgeon with his grosser knife ably keeps them company. Thus at last are we to-day in a position to embark, with the absolute certainty of final mastery, on the study of the "pathology of the living." This phrase, coined some years ago by Sir Berkeley Moynihan, is in my opinion destined to be the slogan of the younger generation. If to-day I might presume to advise a colleague installing himself in general practice, I would say—"Purchase—or, better still, persuade your father to purchase—every kind of illuminated aid to diagnosis, and work out in your office, collaborating with the surgeon in his hospital, the vital and almost unknown problems of living pathology."

The Range of Vision.

What, then, can we see, and how? The answer is, everything, and generally quite easily.

The province of radiology is beyond the grasp of even my sacrilegious hands, yet the discovery of the Coolidge tube and the generalisation of municipal electricity makes it probable that few of us will be without our private, self-worked installations, so I allude to two recent advances of great practical importance. The injection of lipiodol into the cisterna magna and the following of the shadow down the spinal cord is a procedure I never hesitate to practise in all cases of suspected tumour. The puncture between the occiput and the atlas is always rather alarming, but in my own experience and that of others is apparently harmless, and certainly of paramount importance before deciding on laminectomy in all cases of fracture of the vertebræ. The other advance, due also indirectly to the genius of Prof. J. A. Sicard of Paris, is the injection of lipiodol into the bronchi. I have just received from Dr. Alton Ochsner, nephew of the late Ochsner of Chicago, an ingenious and simple technique for the introduction of the oil into the trachea. Like many great discoveries, it was stumbled upon accidentally by an alert mind. If you anæsthetise the pharynx of a person with cocaine, the larynx will receive automatically anything you put into his mouth. You then ask your patient to take a 20 c.cm. cocktail of lipiodol, and the trick is done. Thus yet once again has a valuable and apparently highly intricate procedure passed into the realm of everyday practice.

The ophthalmoscope was popularised in England by a general physician, the late Sir Clifford Allbutt of Cambridge. There is no reason, surely, why any one of us should not get a valuable glance at the fundus in cases of cerebral compression or renal disease, if we can only brave the sneers of the oculist and use a mydriatic. The ear, though apparently so accessible, caused me much trouble, until I adopted the routine use of Siegel's speculum. It seems necessary to point out that any one of us may be called upon to perform a paracentesis of the drum, and that we cannot do so with safety unless we have a working knowledge of the tympanum. It occasionally, too, adds not a little to our reputation, if we can differentiate furunculosis of the external auditory meatus from a perforation, and above all if we avoid sending to a specialist a case suffering from impacted cerumen, or a long-forgotten plug of cotton-wool. As regards the nose, I would remark that there can be surely nothing simpler than to familiarise oneself with the fact that all septa are more or less deviated, a knowledge which may occasionally save a patient from the too enthusiastic resector. And why not transilluminate the antra? A diagnosis of suspected empyema of the left antrum of Highmore may not infrequently help to maintain a laudable respect for us in our colleague across the road, who has to treat the condition. And why, in the name of science and common sense, should we not look for and treat that dilated vein that trickles on the nasal septum, so close to the anterior nares, that vein which is found in more than half the cases of epistaxis?

Is this dabbling? I think not; and the reward is great, while neglect is sometimes costly. For instance, a girl of 6 was brought to me with the history that since birth she had never been able to breathe through her nose. She had huge tonsils, and I was able to palpate a considerable mass of adenoids. After the removal of these, I was much surprised to find that the child remained a confirmed mouth-breather. Various attempts were made to bully the child into breathing through her nose, until at last I made the crucial experiment of closing the mouth with a broad strip of sticking-plaster. This I had hastily to remove 30 seconds later to prevent death from suffocation. The girl had, indeed, never breathed through her nose, for the excellent reason that the nose was completely shut off from the nasopharynx by a velum of mucous membrane stretching across both choanæ. Had I not been too lazy to do a posterior rhinoscopy much trouble, including an entirely futile radiogram, would have been avoided. Tonsils are easy enough to see, but how often do we neglect one simple manœuvre in our inspection. It is essential not only to see their outer aspect, but by careful and systematic palpation with a spatula to ascertain whether the tonsillar crypts contain pus or cheesy matter. Very often this simple procedure will open up a minute abscess.

With the larynx I always use, first, the indirect method, but often direct laryngoscopy by the Jackson technique is necessary, especially in children suspected of laryngeal or tracheal diphtheria. The following case is of interest. A man, aged 20, consulted me for the removal of a tracheotomy tube which he had been wearing for a year. Indirect laryngoscopy revealed a round bilobulated tumour in the region of the vocal cords. Direct laryngoscopy in the Jackson-Boyce position enabled me to diagnose complete absence of the epiglottis, and complete occlusion of the larynx by a velum of mucous membrane which covered the two arytenoids and gave a tumour-like appearance to these structures. A bougie placed between the arytenoids could find no entrance into the glottis. This diagnosis was clinched by subsequent operation from below.

The visibility of the stomach apart from X rays still leaves much to be desired. So we often open the abdomen

* Being an address delivered before the Sixth Medical Conference of the American University of Beyrouth.

and paw about with the anterior surface of the stomach and duodenum. We have learnt by sad experience that "lucky shot" gastro-enterostomies often lead to disasters, yet if, when the findings are negative, we want to be sure that no ulcer is present, we become involved in a somewhat lengthy surgical procedure. I cannot see why the suggestion of Devine of Australia should not be adopted. He introduces through a puncture in the anterior gastric wall a special endoscope (an ordinary urethroscope would do) and by gentle air inflation succeeds in getting a comprehensive view of the mucous membrane. This appeals to me as an essentially safe method.

Hæmorrhoids were, in my student days, considered to be something usually invisible and impalpable. It is true that an advanced young surgeon used a sigmoidoscope, but there was much talk of rupture of the rectum, and a general anæsthetic was advised. Personally I find sigmoidoscopy one of the easiest of procedures. I use it invariably in all cases of chronic diarrhœa, and prefer to test for amœba by direct swabs, taken through the sigmoidoscope, of any suspicious ulcer. The London St. Mark's Hospital hæmorrhoidal speculum reveals hæmorrhoids with absolute precision, and it is usually easy to define which particular group is responsible for a hæmorrhage.

I still hear of operations on kidneys being performed by surgeons of repute without previous cystoscopy. I can imagine no circumstances justifying such an omission, unless it be the case of traumatic rupture of one kidney, where immediate nephrectomy may be required to save life. And yet can any procedure be simpler? We are all at least expected to be able to pass a catheter, and I am sure we all do frequently, and yet I find my colleagues hesitating to pass one when it has a light at one end.

For the differentiation of renal function I prefer the intramuscular injection of 30 cg. of indigo carmine in 5 c.cm. of sterile water, and examination of the ureters 20 minutes later. Catheterisation of the ureters may be extremely difficult, but is usually easy, and the dye greatly facilitates their location in the exceptional case.

Exploration of the Thorax.

It is fitting at this point to pay a heartfelt tribute to the name of the great specialist, Chevalier Jackson of Philadelphia, whose unswerving devotion and research have been the means of saving in a direct and unquestionable manner more lives than, I believe, any other man of the present day. In his published work (and this is the point I wish especially to make) he devotes much space, in an enthusiastic and wholly infectious manner, to persuading everybody to "have a go at" those awesome and so often fatal channels, the trachea and œsophagus. I may be wrong; but I believe I can count on the fingers of one hand those of my colleagues who in this country assiduously practise this most beneficent art. And yet throughout every village and town in Syria little children are swallowing hard, attractive, and terrible objects, and every now and again some old man or woman will attempt to digest his own false teeth. We must put this matter right at once. Here is my own personal experience. The art is undoubtedly difficult. Jackson maintains that no anæsthetic of any kind should be used in children and only light local anæsthesia in the case of adults. I confess that, except in babies, where it is surprisingly easy, and old edentulous men, I have had recourse to a general anæsthetic and a complete set of tracheotomy instruments, ready for instant use. However, under these conditions, I have seen a number of strictures. I have extracted by sight a coin the size of a halfpenny, from the œsophagus of a girl aged 5, three months after this coin had mysteriously disappeared from the family purse; and I have followed a bead down the right bronchus of a boy of 6, when, luckily for us both, perhaps, he coughed violently, swallowed it into his stomach and passed it in the stool safe and sound the next morning. It was a bright red glass bead, to me more precious than a ruby.

It was in 1923 at the Brompton Hospital, that, under the guidance of Mr. Tudor Edwards, I first saw with a Jacobæus thoracoscope a tumour of the lung. I confess I did not see much, but I saw enough not to be discouraged. At Aleppo it is now the practice in the pneumothorax department of the hospital to thoracoscope any patient presenting moderate adhesions just sufficient to prevent a complete collapse where such is desirable) and every patient in the general clinic with a pleural effusion, in whom a tumour is suspected. The technique is as follows. After a sufficient insufflation of air, preferably on the previous day, a wide intercostal space is chosen and a thorough infiltration made with 2 per cent. novocaine of skin fascia muscle and pleura. Through a small cut through the skin, a large, special, valved cannula with trocar is pushed firmly through into the interpleural air space. The trocar is withdrawn and a straight endoscope is introduced. I shall never forget my first personal case. My eye discovered an immense lighted cavern; in the distance could be seen the bluish mottled mass of collapsed lung, like some primæval mammoth slowly heaving in his sleep; the walls of the magic cave, the parietal pleura, were glistening pink, streaked with brilliant blood-vessels, the ribs showing white and clean like rock strata beneath. Across the spacious air stretched a thin white glittering band of adhesion, tethering and puckering the lung to the wall. Near the base, between the lung and the diaphragm, thicker and shorter fleshy adhesions could be seen like the joined stalactites and stalagmites of some limestone cave in Derbyshire. The immediate excuse for this pleasure trip was an attempt to sever the adhesions with a cautery. This I attempted, but without success, or damage. The work of Jacobæus of Stockholm shows that this is not only possible, but desirable, though the actual number of cases where it is feasible is apparently small. In another case of pleural effusion in an old man, after the fluid had been evacuated and replaced by air, following the technique of Dr. L. S. T. Burrell, I satisfied myself by thoracoscopy that there was a growth of the pleura to account for the effusion.

I consider thoracoscopy to be indicated in cases undergoing compression treatment, in order to investigate the degree of collapse, where a thickened pleura does not permit of a clear definition of the lung by X rays. In Aleppo we attach much importance to radiographic control before each insufflation.

Abdominoscopy.

Abdominoscopy I began on my own in 1924, having heard rather vaguely that some surgeons were trying it in America. My own cases up to date are exclusively confined to patients with ascites. I use the Jacobæus thoracoscope, and proceed as follows. The fluid is evacuated through the cannula under local anæsthesia. The evacuation should be as complete as possible, as even a little fluid spoils the picture. Using the same cannula, I introduce filtered air by means of the pneumothorax apparatus. The abdominal respiration is well shown on the water manometer, and is of course just the converse of the thoracic type. A usual pressure at the end of insufflation, when the abdominal wall is well ballooned out and separated by a definite air space from the intestines, is between plus 10 and plus 14. The actual quantity of air used varies greatly, but I have used up to two litres without discomfort to the patient. The endoscope is then introduced, and can be passed quite painlessly to and fro under the lighted dome of the anterior abdominal wall. In a favourable case one sees the intestines flattened out as after the removal of a large ovarian cyst; portions of the liver, gall-bladder, spleen, stomach, and, in the Trendelenburg position, the ovaries and uterus have all been seen. In one case, a child of 3½ I was able to satisfy myself that the tuberculous process for which he had been operated on six months previously was receding. This child only had local anæsthesia and made absolutely no complaint throughout the examination. In a man of 70, I was able to avoid a useless laparotomy by observing a growth involving the gall-bladder and numerous metastases scattered all over the under surface of the parietal peritoneum. Thus, too, it is usually easy in most cases to differentiate between tuberculous and cirrhotic ascites, and I feel sure that most growths can actually be seen. The view, indeed, obtained compares favourably with that obtained by the usual laparotomy incision. Dr. O. E. Nadeau of Chicago, a notable pioneer in this branch, has, as he has been kind enough to inform me, devised a technique which is surely destined to deal a death blow to the operation of exploratory laparotomy in chronic cases, an operation which we even now practise, not without a twinge of conscience, not without a sense of shame. Using a flexible cannula, a Braasch cystoscope and a common foot pump, he has proceeded to blow up, enter, and examine a whole series of non-ascitic abdomens with perfect impunity and evident satisfaction. Personally, I intend to continue to use the pneumothorax apparatus and a fine Riviere cannula to obtain my first air pocket, before introducing the larger instrument.

Abdominoscopy has undoubtedly a great future. Among other things it may help to solve is the precise mechanism of the evacuation of the gall-bladder, a problem which Graham is attacking from another angle by cholecystography.

The Unity of the Body.

What, then, is the conclusion of the whole matter?

Under the great sweeping flood that represents the growing complexity of modern medicine, let us not allow ourselves to be submerged. Let us hold fast to that great life-saving conception of the essential unity of the human body. Let us oppose fearlessly those currents of medical thought that tend to isolate, arbitrarily and to the detriment of true knowledge, the various segments of this one great subject. Let us welcome all methods, all discoveries, that help the one man in charge of the one patient to broaden the base of his attack, to widen the sweep of his beneficent vision, remembering always that (let the specialist rage never so fiercely) Diagnosis is the sovereign right of every physician.

RECREATION IN CONVALESCENCE.

ONE of the severest tests of clinical skill comes when the doctor is asked to direct a patient towards active life after a serious or crippling illness. An American institution, the Burke Foundation, White Plains, N.Y., has tackled this problem with characteristic enthusiasm and ingenuity.[1] Sixty acres of land provide ample space for the 300 patients, and the staff consists of two resident physicians, a small nursing corps, and a supervisor of recreation. The contrast between this organised convalescence and the practice at English homes is a striking one. The Director gives golf the highest place among re-educational games. Patients start on simple short courses, with holes ranging in length from 10 to 70 yards, and use solid rubber practice balls and any old clubs available which they keep in order themselves at negligible cost. Those on crutches and those who cannot bend are helped by companions, and the exercise well-nigh fulfils the ideal: outdoor exercise of the entire body, intense interest, wholesome competition and self-grading of exertion. In this institution walking is organised to a fine art. Patients proceed, in the words of the pamphlet, "from crutch and cane hobbling to extended speed hiking," from strolling to meals or the canteen or entertainment hall to walking as far as a distant arbour or hammock and finally to nature-study or shopping expeditions. The trouble with walking is that in this age it is not considered an interesting occupation, but no such objection is raised to dancing. Patients who cannot walk well can achieve the quiet gliding movements of modern dancing, and rest periods can be ensured by providing entertainment items between dances. The number of middle-aged and elderly people who renew a certain measure of youth by modified participation in the dances is surprising. To the sound of clinking metal alone is ascribed some of the value of quoit-throwing, which is a safe, all-round, intermittent exercise. Football sounds strenuous, but a football lying about will often tempt a crutched patient to propel it cautiously with one foot. Fives, played with old tennis balls on shortened distances, can be very valuable if the patients are carefully watched for overstrain. If a captive ball is to be used, where expense is an object, thick wooden paddles should replace the racquets, and an old tennis ball be covered with a sturdy canvas or leather cover. Tennis played over a sagging net, with some relaxation of the rules, can be a very satisfying recreation for convalescents. Mankind has played with a ball from the dawn of history and very often the first step forward that an introspective convalescent can be persuaded to take is to handle, squeeze, toss, bounce, or kick a ball. Unrestricted ball play, no matter how bizarre, should be possible for every convalescent. Bowls has been played from a wheel-chair at White Plains, and crocquet is also suitable for crippled patients. We are accustomed to think of putting the weight and throwing the hammer as exercises for brawny giants at athletic gatherings, but if light apparatus is kept prominently in view nearly every man will pick up a piece from time to time and test himself cautiously. The winter season is a more serious matter in New York than it is in this country, but the director notes that the convalescent shrinks far more from wind than from cold, and that he should be urged out to walk and play in sheltered courts. Semi-invalids who are shut indoors rapidly develop mild depressions and irritabilities, and, if they must be kept in, ample indoor exercise must be available. Billiards, dancing, gymnasium, and table games are easily provided. It is interesting to learn that gambling has been sternly repressed at the Burke Foundation, not from any moral prejudice, but because it proved anti-convalescent. The player for money grows strained, restless, irritable, quarrelsome, uncoöperative, and adopts bad postures. Those in charge of convalescents should read this little book. The organising of graded exercise may not be easy if the patient is not in an institution where he can compete with others in like state, but his doctor could often arrange for competition of suitable severity to be provided by his friends.

MEDICAL PHOTOGRAPHY.

Messrs. KODAK, Ltd., Kingsway, W.C., announce the establishment of a special department for photography, subdivided into the three sections of radiography, clinical photography, and medical and surgical cinematography. A pamphlet, entitled X Ray News, deals with the use of the intensifying screen in radiography, sketching the development of this valuable apparatus. The Rheinberg filters for clinical microscopy, described in some detail, are designed to show the section illuminated in one colour against a background of another. The method is a refinement which should have its use in cases where staining is difficult or unsatisfactory.

[1] Recreational Therapy in Convalescence, and Allied Subnormal Health Conditions. Frederic Brush, M.D., Medical Director. Issued through the Sturgis Fund.

ULTRA-VIOLET APPARATUS.

THE MEDICAL SUPPLY ASSOCIATION, Ltd., of 167-185, Gray's Inn-road, London, W.C., have placed on the market under the name of Medisun a small mercury lamp designed as a source of ultra-violet radiation of moderate intensity with a corresponding current consumption. The quartz burner is placed in a deep metal hood supported on a wide aluminium base containing the series resistance, the whole instrument being small and portable. The burner is made in two forms for use on direct or alternating current, and since, in the latter case, a special transformer is required, the price is increased from £10 to £18. The direct current instrument consumes about 1 ampère and hence is very economical in running costs. The alternating type requires considerably more current, from 2·5 to 4·5 ampères according to the voltage of the supply. Like all mercury arcs, the Medisun uses more current on starting up, but not beyond the range of an ordinary house lighting circuit. The quality of the radiation generated by this small lamp is apparently identical with that of the large quartz mercury arcs.

The catalogue of the COX CAVENDISH ELECTRICAL Co. (105, Great Portland-street, London, W.) contains, besides a list of apparatus supplied for ultra-violet therapy, a number of short extracts from books and papers, describing what may be achieved by its use, and a bibliography for further reference. The apparatus is of large range, including mercury, carbon, cored-carbon, and tungsten arcs of various types and standard makes (Hanovia, Hewitic, Cox Cavendish). An interesting piece of mechanism is the Water Steriliser (Hewitic) which employs ultra-violet radiation from a quartz mercury lamp and will, it is claimed, sterilise water at the rate of 140 gallons per hour. Several small ultra-violet lamps for use in the home are described, including (on a separate leaflet) a small mercury lamp. The radiation from such a lamp will be rich in the shorter wave-lengths and for that reason more effective in skilled hands than the carbon or cored arcs, but it should be borne in mind that the dangers of blistering the skin and damaging the eyesight have been proportionately increased. The absolute necessity of wearing efficient goggles is not yet realised by the public, and no opportunity should be missed of emphasising the point.

A catalogue published by Messrs. WATSON of Sunic House, Kingsway, is a concise but representative list of lamps and accessories for ultra-violet therapy. It contains, besides the actual specifications, mush useful information for the practitioner who wishes to select suitable apparatus. Such matters as cost of running, repairs, and the use of goggles are treated fully. A short section is devoted to infra-red radiation, and a few instruments for measuring intensity of radiation are included.

X RAY APPARATUS.

Messrs. WATSON issue also a small booklet with this title describing the Muller Hot Cathode Tube for which they are agents in this country. The cathode of this tube contains an electrically heated filament which generates the electrons carrying the current. It is claimed that the Muller tube does not often break down owing to perforation of the glass, since the residual gas in the tube is helium which allows of a higher pressure than normal. In some of the tubes described the filament is so arranged as to project a line focus on the anode which is much blunter than in the usual type of tube. Viewed from the direction of the principal X ray beam, the line focus is seen end on and is thereby reduced to the dimensions of a spot. The intensity of the X rays generated remains unchanged but the heating effect of the discharge is distributed over a larger area. Line focus tubes are made both in air-cooled and in water-cooled types for various strengths of current. Tubes of this type require special care in adjustment as a rotation in the holder results in an apparent broadening of the focus and consequent loss in detail.

Another catalogue of the same firm describes various interesting types of apparatus designed to accommodate the Metalix tube for diagnostic work. In the combined couch and screening stand one tube can be used for all positions over and under couch and for upright screening at a wide range of focal distance. Adjustment of the tube can be made swiftly without disturbing the patient, and there is a saving in cost and weight without sacrifice of safety. A copy of this catalogue will be sent post free on application.

BRADFORD MUNICIPAL GENERAL HOSPITAL.—At the annual distribution of prizes and certificates, the medical superintendent, Mr. B. Holroyd Slater, spoke of the great increase in the work. Quite recently, he said, there were so many operations to be performed that the staff were working continuously in the theatre from 8.30 one morning until 2.30 the following morning. The nurses, he added, were living under "miserable conditions."

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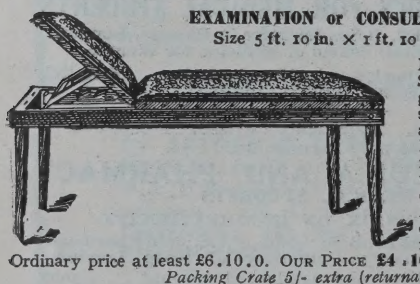

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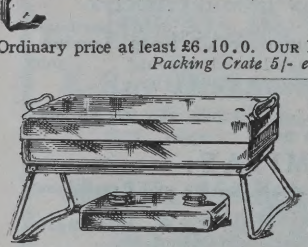

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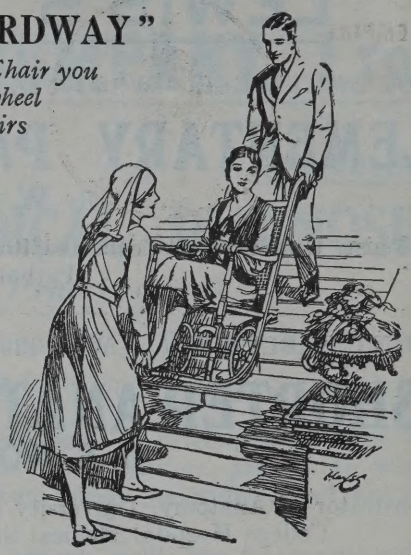

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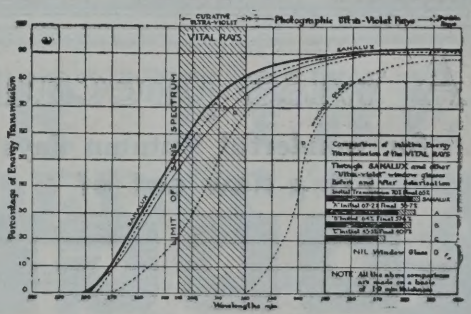
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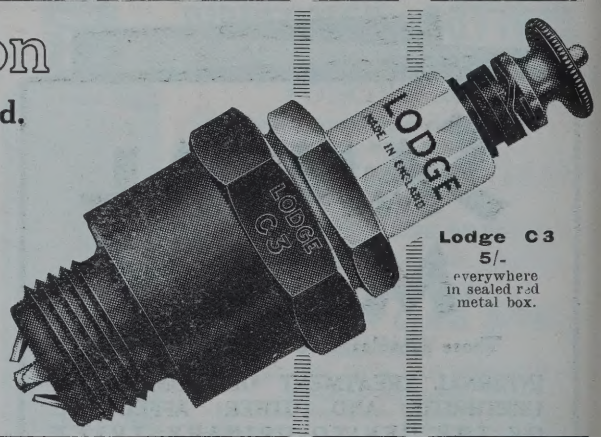

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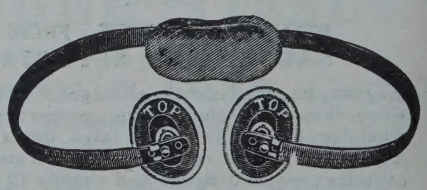

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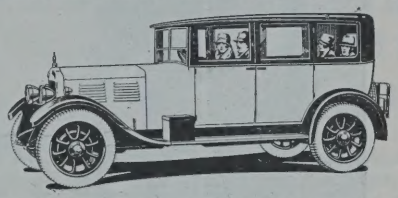

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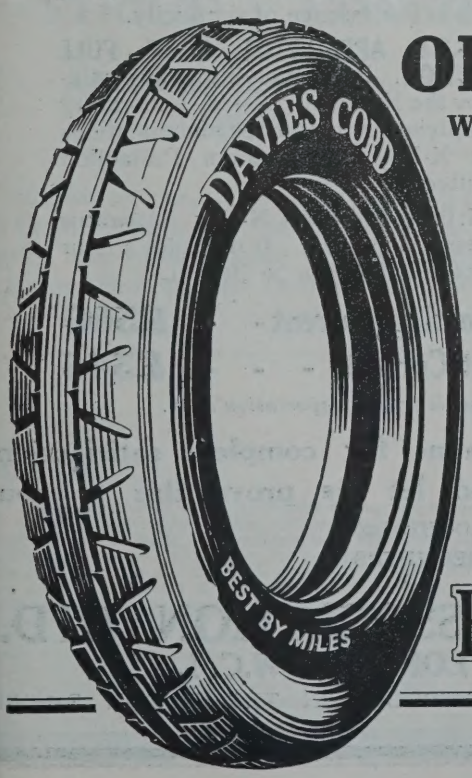

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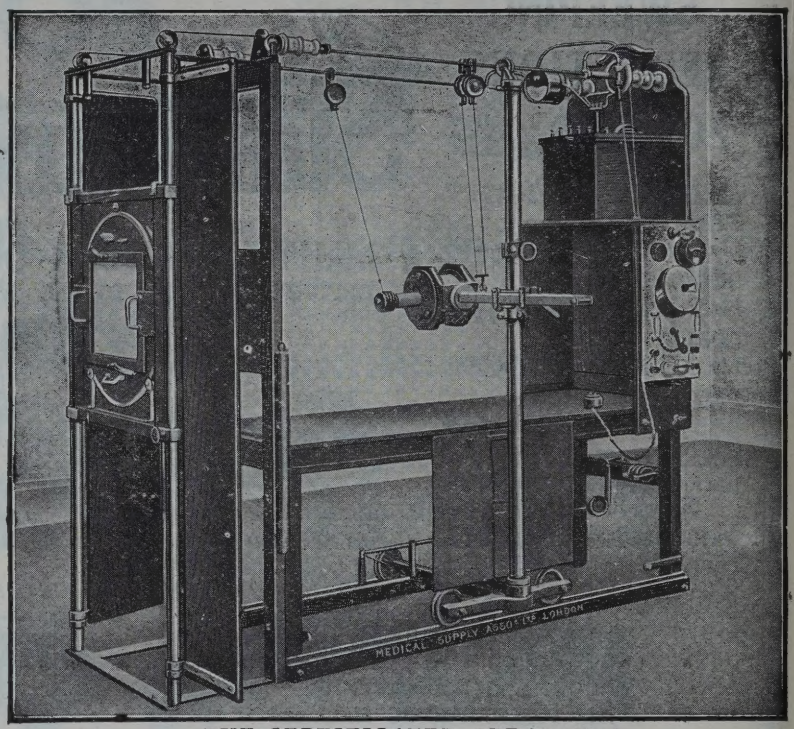

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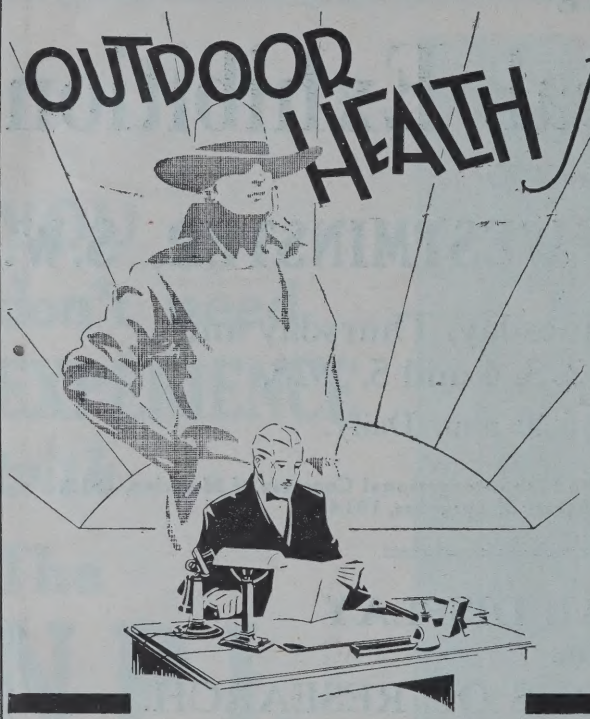

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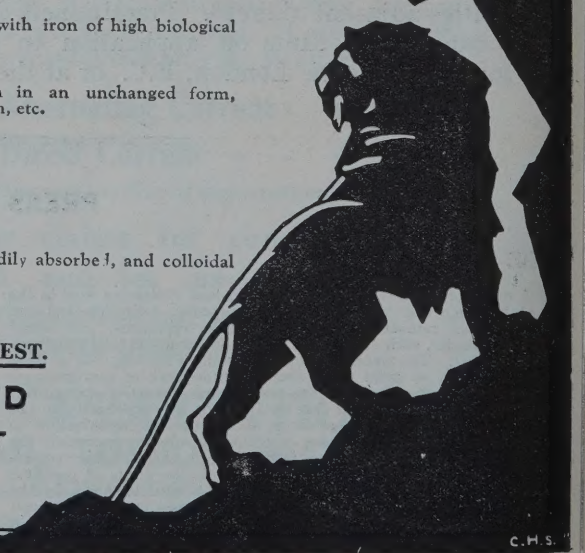

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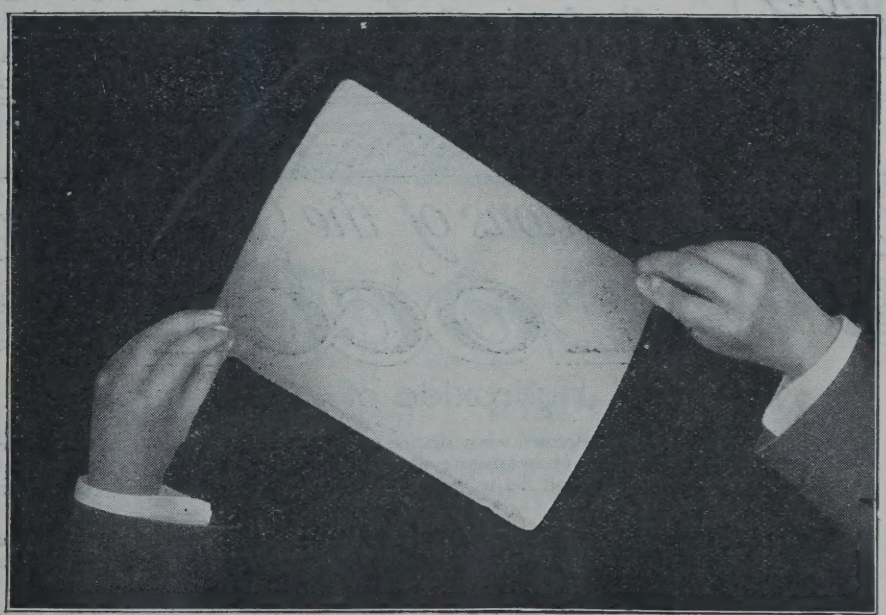

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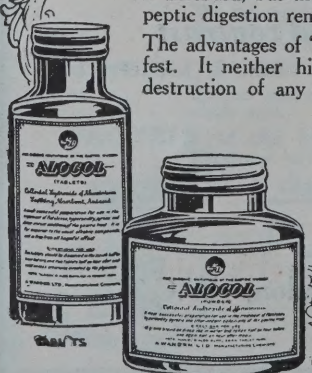

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'PANOPEPTON' has nourished and restored in many cases where the patient has steadily lost strength on other foods.

SUPPLIED IN 12-oz. BOTTLES.

'ENZYMOL'

A SURGICAL SOLVENT AND ANTISEPTIC.

AN EXTRACT OF THE GASTRIC GLAND OBTAINED BY DIRECT SOLUTION, ESPECIALLY PREPARED FOR EXTERNAL APPLICATION.

'ENZYMOL' exerts remarkable solvent, healing, antiseptic and deodorizing action in the treatment of pus cases in general, gangrene, abscesses, sinuses, leg ulcers, etc. etc.

SUPPLIED IN 4-oz. BOTTLES.

Originated and Manufactured by—
FAIRCHILD BROS. & FOSTER (Inc. N.Y.)
New York, and 65, Holborn Viaduct, London, E.C.1.

Agents:—
BURROUGHS, WELLCOME & CO.,
London, Sydney, and Cape Town.

YATREN-CASEIN

in the

WAR AGAINST RHEUMATISM

Long experience has proved that for the PROTEIN-SHOCK THERAPY of Rheumatic Affections of Joints and Muscles Yatren-Casein is the most successful stimulant.

PRINCIPAL ADVANTAGES:

Mild focal reaction.	**No general reactions.**
Enhanced synergistic action.	**Constant composition.**
Facile Dosability.	**Unalterable sterility.**

Yatren-Casein "weak" and "strong"

Original boxes, 6 amps. of 1 c.c.
" " 6 " " 5 c.c.
" " 25 " " 1 c.c.
and Bottles of 25 c.c.

BEHRING INSTITUTE, MARBURG-LAHN, GERMANY
London: W. BREDT, 41, Great Tower Street, E.C.3
Tel. No. "Royal 2668." T.A.: "Jalap London."

Aesculapius

PERNICIOUS ANÆMIA

The response to treatment of cases of pernicious anæmia with liver and liver extracts is exceptionally good in almost every case. The blood picture rapidly returns to normal, and apparently remains so indefinately so long as the treatment is persevered with. It remains to be seen whether pemanent cure can be effected, but it is now known in certain cases that once a normal blood picture is re-established, the dosage can be reduced without causing exacerbation.

HEPATEX

Hepatex is a liquid extract of liver concentrated so that 4 ozs. contains the equivalent of 64ozs. of fresh liver. It has been extensively tried clinically with marked success. In addition to being the most convenient form for administration, there appears to be no therapeutic difference between it and the more costly powdered extracts. *It is supplied in 4 oz. bottles at 12/- per bottle.* This amount is sufficient for 8 days full treatment.

EVANS SONS LESCHER & WEBB LIMITED

E2 56 Hanover Street, LIVERPOOL. Evans' Biological Institute, RUNCORN. 50 Bartholomew Close, LONDON, E.C.1.

Roboleine

THE FOOD THAT BUILDS THE BODY

AS A PREVENTIVE

AS each Autumn comes along we find an increased prescription of 'Roboleine' as a fortifier against the rigours of an English Winter. Many patients are thus able to gather sufficient strength to escape even an epidemic of severity such as was experienced in the Winter of 1918-1919.

FORMULA

Marrow from the long bones, Red Marrow from Rib bones of prime oxen, "Cream of Malt," Egg Yolk and Neutralized Lemon Juice.

CONSTITUENTS

Animal Fats, Maltose, Diastase, and natural nitrogenous and phosphoric compounds.

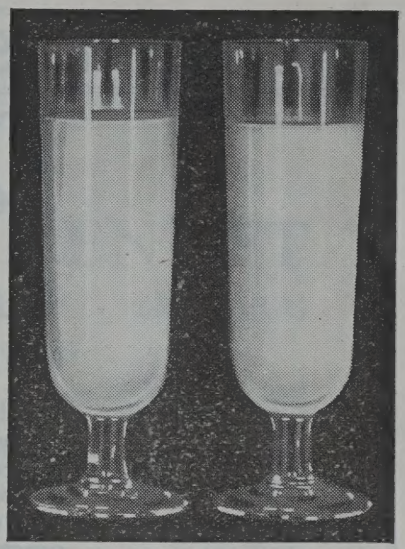
CLINICAL SAMPLE AND LITERATURE ON REQUEST.

OPPENHEIMER, SON & CO., LTD., 179, QUEEN VICTORIA STREET, LONDON, E.C.4.

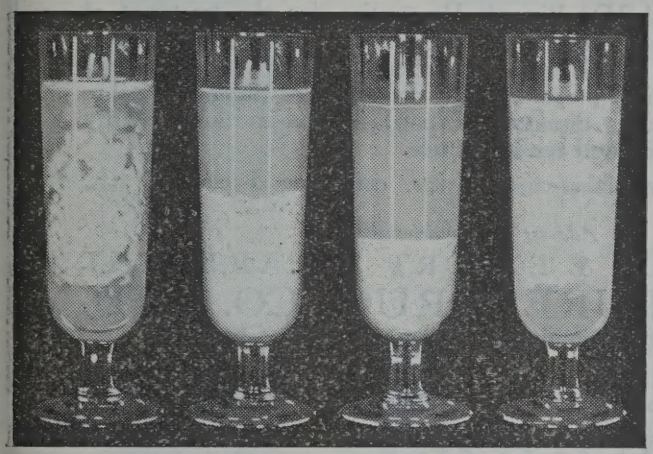
Manufacturers of "MAGLACTIS," the Pure Hydrate of Magnesia with the continuous action.

Saying

"NEAREST TO MOTHER'S MILK"



BREAST MILK AND HUMANISED TRUFOOD
Virtually Identical



COWS' MILK (GRADE "A") AND 3 WELL-KNOWN INFANT FOODS

and PROVING IT

A RECENT investigation into the relative merits of various infant foods definitely proved that Humanised Trufood more closely resembles breast milk than any other alternative milk diet. The glasses shown in this announcement portray the findings of this investigation—findings which have been confirmed in the laboratories of The Clinical Research Association.

Note how breast milk and Humanised Trufood are virtually identical. The similarity is not based on appearance alone, it extends to the *proportion* and *condition* of the constituents, too.

May we have the pleasure of sending you samples and medical literature—photographic enlargements of the above test—in order that you may appraise the merits of Humanised Trufood?

HUMANISED

TRUFOOD

The Scientific Alternative to Breast Feeding

TRUFOOD LTD., THE CREAMERIES, WRENBURY, Nr. NANTWICH, CHESHIRE

BOOTS PRODUCTS

Bismostab (BOOTS)

METALLIC BISMUTH SUSPENSION

THE STANDARD Bismuth Preparation for the treatment of **syphilis** and other **spirochætal** diseases. Bismuth has largely replaced mercury as an adjunct to Arsenobenzol Therapy. Consisting of a suspension of specially prepared, finely divided, pure Bismuth metal in 5% glucose solution, Bismostab (Boots) is **non-irritant, highly concentrated, sterile and ready for use.**

Supplied in handy rubber-cupped vials, containing 5 c.c., 10 c.c., and 1 oz. (28 c.c.)

Obtainable through all branches of The Boots Chemists

Address all enquiries to :

WHOLESALE & EXPORT DEPARTMENT
BOOTS PURE DRUG CO. LTD.
Manufacturing Chemists & Makers of Fine Chemicals
NOTTINGHAM - - - ENGLAND.
Telephone : Nottingham 45501. Telegrams : "Drug, Nottingham."

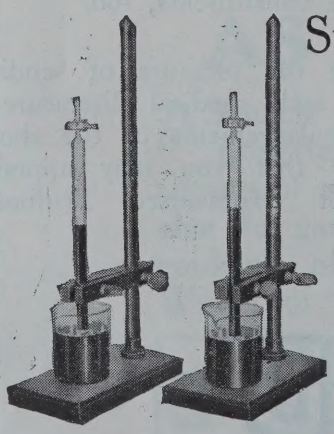
B,B. 16

Dioxogen

(Trade H_2O_2 12v Mark)

means

Stable Hydrogen Peroxide



A B

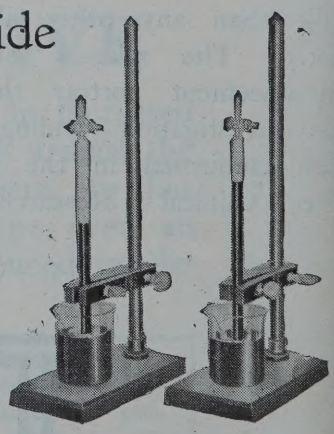
Showing volumes of Oxygen liberated by (A) "Dioxogen," and (B) the same quantity of a fresh sample of ordinary Hydrogen Peroxide (10 volumes).

The merits of nascent oxygen as an antiseptic are too well known to require reiteration. The difficulty lies in obtaining a convenient and reliable source and, while Hydrogen Peroxide is most convenient in use, the unreliability, both in strength and in keeping properties, of the ordinary commercial product seriously limits its utility in practice.

"DIOXOGEN" definitely overcomes this disadvantage. Its stability is remarkable. It can be boiled or frozen without impairment of therapeutic power and, even after being kept for long periods, will yield its full volume of oxygen. This dependability of "Dioxogen" is well exemplified in the accompanying illustrations.

Descriptive literature and a clinical trial sample will be sent post free on application.

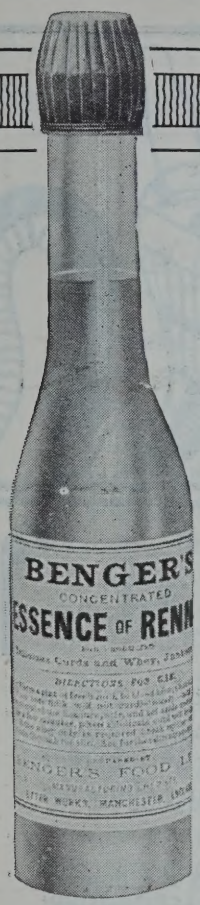
Sole Distributors :



A B

Showing volumes of Oxygen liberated by the same quantity of (A) "Dioxogen" and (B) Hydrogen Peroxide (10 volumes), both having been kept for the same period.

ALLEN & HANBURYS Ltd., Bethnal Green, London, E. 2



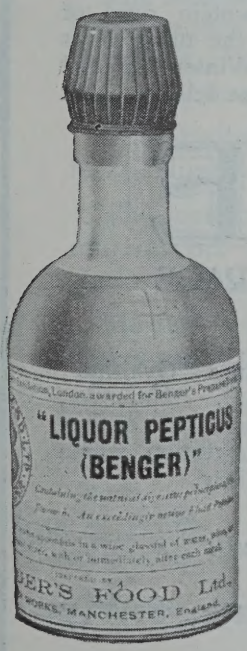
ESSENCE *of* RENNET

CONCENTRATED (BENGER)

(Curdling Fluid)

Originally prepared at the request of a prominent physician, this highly concentrated essence is of especial value in Infant and Invalid Feeding. As it is concentrated it is much quicker in its effect than most other preparations of Rennet. Whey prepared with Benger's Essence of Rennet is of the greatest value in the treatment of diarrhœa, vomiting, etc.; it can be employed with confidence and will yield good results. Junket can be made more quickly and at a lower cost by using Benger's Essence of Rennet than by any other method.

In 1/- and 1/9 bottles.
Larger sizes for hospitals, etc., use.



LIQUOR PEPTICUS

(BENGER).

"A digestive agent of extraordinary power."

Sir William Roberts, M.D., F.R.S.

Benger's Liquor Pepticus, is a concentrated and highly active fluid pepsin in acid solution which acts particularly upon meat, eggs and other proteid foods.

The best results from the use of Liquor Pepticus are obtained when it is prescribed alone. Should the prescriber wish to combine medicaments of a tonic nature, it will be recollected that those which are free from astringency and alkalinity should be selected.

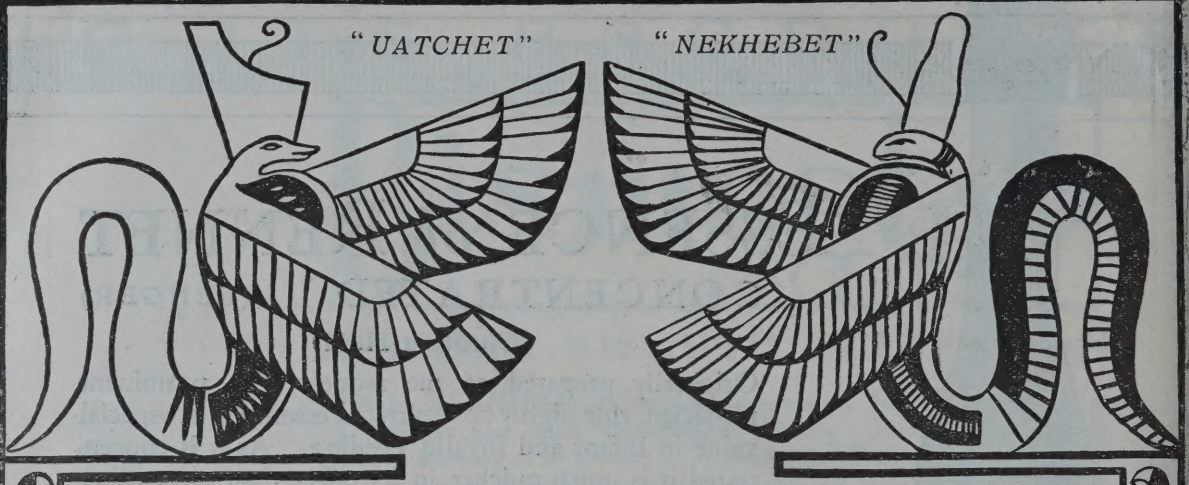
In 4, 8 and 16-oz. bottles.
Prices: 3/6, 6/6 and 12/6.

BENGER'S FOOD, LTD., — Otter Works, — MANCHESTER.
NEW YORK: 90, Beekman St. SYDNEY: 350, George St. CAPE TOWN: P.O. Box 573.

M.140

BENGER'S Food

REGD. TRADE MARK



For the Delicate Child

THE delicate, backward, nervous or unstable child is ever a problem in the children's clinic. Very frequently faulty metabolism lies at the seat of the trouble, involving an inherent incapacity to make adequate use of the essential and vitalizing elements of ordinary nourishment.

Liberality of the nitrogenous or building elements of the diet to the limit of digestive capacity is recommended by authority. Two teaspoonfuls of "Ovaltine" dissolved in half a pint of milk produces a tonic and nutritive beverage well adapted to this requirement. It gives a protein to non-protein ratio of approximately 1 to 3.5 which is a liberal apportionment of the nitrogenous element. The proteins of "Ovaltine" are those derived from "Winter" Malted Barley, Eggs and Milk, valued sources of nutritive material for the delicate child.

OVALTINE

TONIC FOOD BEVERAGE

Such a diet taxes to the minimum the digestive function because "Ovaltine" modifies the milk curd to a light, easily digested coagulum. Moreover, clinical evidence plainly shows that "Ovaltine" is well borne in spite of food intolerance, anorexia and those numerous perversities of alimentation which undermine the constitution and frequently result in permanent injury.

A liberal supply sent free for clinical trial on request

A. WANDER LTD., 184, Queen's Gate, S.W.7

Laboratories & Works: King's Langley, Herts

M215

Note for the Medical Profession

The Selective Action of Antiseptics

THE mere statement that the R.W. coefficient of an antiseptic is 2, 20, or even 50, is of little value in estimating its usefulness for any variety of purposes. The test organism employed in this method is B. Typhosus, and an antiseptic which will kill this organism in high dilution will not necessarily kill others under similar conditions.

The coal-tar group of antiseptics has a selective action on bacilli of the typhoid-coli group, with the consequence that Rideal-Walker coefficients for these products are remarkably and deceptively high. If the same test is performed using a variety of other organisms, it will commonly be found that there are no two distinct varieties for which the coefficient is the same. There may be some delicate or peculiarly susceptible organisms giving a higher result, but there will be others, notably the group of Gram-positive cocci, which exhibit a degree of resistance to the antiseptic which is out of all proportion to that of B. Typhosus. Hence the fact that the R.W. coefficient of an antiseptic is high is no guarantee whatever that it will be of service in dealing, for example, with sepsis, or any condition demanding an efficient germicide for streptococci.

The selective action of Monsol differs from that of any other antiseptic known. Perhaps its most valuable action is on the Streptococcus Pyogenes. The following facts, confirmed by repeated observation, exemplify its capacity for destroying this organism.

The maximum dilution in which Phenol or lysol kills S. Pyogenes in 15 minutes is **1 in 100.**

The maximum dilution in which Monsol kills S. Pyogenes in 15 minutes lies between **1 in 1,200** and **1 in 1,500** according to the strain used.

Monsol is non-poisonous, even in comparatively strong solution, and is non-irritant.

IN SEPSIS use

Monsol
Liquid for dressings, douches, packs, and all sick-room purposes

Monsol Ointment

MONSOL
BRAND
GERMICIDE AND DISINFECTANT

Monsol Capsules
Keratin-coated for intestinal disinfection

Monsol Throat Pastilles

U.K. Distributors: Thomas Christy & Company, 4–12 Old Swan Lane, Upper Thames Street, London, E.C.
Manufacturers: The Mond Staffordshire Refining Co., Ltd., 47 Victoria Street, London, S.W.1

Parke, Davis & Co.

LIVER EXTRACT

In Pernicious Anæmia

THE LIVER EXTRACT offered by Parke, Davis & Co., for use in the treatment of pernicious anæmia, is prepared by a method that has been shown to produce an exceedingly active product. It is supplied in vials each containing the extract from 100 grammes (approximately 3½ ounces) of fresh liver, the contents of three or more vials being taken daily.

The P., D. & Co. Liver Extract is a palatable preparation with a pleasant salty taste, and it may be taken sprinkled over potatoes, meat or bread. Its miscibility with water, milk, soup, orange or lemon juice and other liquid foods also suggests other acceptable modes of administration.

Supplied in packages of 24 vials. Further details will be furnished on request.

PARKE, DAVIS & COMPANY, 50 BEAK STREET, LONDON, W.1

Concentrated Refined Sera

Diphtheria Antitoxin with a concentration of 2,500 units per c.c., and a guaranteed protein content of less than 10 per cent.

It is generally accepted that the possibility of serum sickness is in certain relation to the protein content of the serum. In view of this factor it is important that any process used for the concentration of natural sera should include a method for effecting a proportionate reduction of the protein content of the sera. Further, it is well known that most processes of chemical concentration reduce considerably the reaction velocity of the natural serum, and it has been demonstrated in experiments with animals that the therapeutic value of such concentrated serum is found to be considerably lower than the natural serum of the same content of antitoxic units. Thus, in concentrating the serum, it is necessary—

(1) to prevent an increase in protein content per unit of volume of the serum;

(2) to guard against any decrease in the reaction velocity of the serum.

D.S.I. Diphtheria Antitoxin

is prepared and concentrated with these conditions in view.

The protein content of D.S.I. Diphtheria Antitoxin never exceeds that of the natural serum, and it is guaranteed to be not more than 10 per cent.; consequently the colloidosmotic pressure of the solution is the most favourable for resorption, and the fluid is easily pressed through even very fine canulas.

Any reduction of the reaction velocity in the antitoxin is guarded against also by the special process adopted; thus the optimum therapeutic value is retained after concentration.

D.S.I. Diphtheria Antitoxin is issued in the following concentrations:—

Concentrated and Refined—1,500 units per c.c. with a guaranteed protein content of less than 10 per cent.

1 c.c.	ampoules containing	1,500 units
2 c.c.	,, ,,	3,000 ,,
Vials	,,	4,000 ,,
,,	,,	8,000 ,,
,,	,,	10,000 ,,

Superconcentrated and Refined—2,500 units per c.c. also with a guaranteed protein content of less than 10 per cent.

Vials containing 10,000 units
,, ,, 20,000 ,,

Literature with reference to Vaccines and Sera (D.S.I. brand) on application

THE BRITISH DRUG HOUSES LIMITED
LONDON N-1

V.S.11

Norwegian Medicinal Cod Liver Oil

The remarkable results achieved by recent vitamin research have led to a world-wide record-breaking consumption of Norwegian Medicinal Cod Liver Oil.

As regards the latest scientific investigations concerning the medicinal use of cod liver oil, all who are interested in this important matter are referred to a paper by Professor E. Poulsson of the Pharmacological Institute at the University of Oslo.

The paper has been published in the form of a booklet under the title of "On the Effects and Medicinal Use of Cod Liver Oil", and can be obtained, free and post-free, on application to the following:

NATIONAL COMMITTEE FOR PROMOTING
THE CONSUMPTION OF NORWEGIAN
COD LIVER OIL · BERGEN, NORWAY

FABRITIUS

A marked Reduction in the fit incidence

follows the use of

TRADE MARK **LUMINAL** BRAND

PHENOBARBITAL

in

EPILEPSY

ACCORDING to the reports of Clinical Investigators freedom from attacks is secured with comparatively small doses, and even during prolonged administration disagreeable and deleterious by-effects have been but rarely observed

LITERATURE ON REQUEST

BAYER PRODUCTS, LTD.

19 *ST. DUNSTAN'S HILL, LONDON, E.C.3*

BAYER PRODUCTS LTD. BAYER LONDON

MERCUROCHROME

220 SOLUBLE

A VALUABLE GENERAL ANTISEPTIC

NON-IRRITANT PENETRATIVE

SPECIALLY RECOMMENDED

for the treatment of

INFECTIONS

OF THE

GENITO-URINARY TRACT

MERCUROCHROME is an organic compound of mercury of high germicidal and penetrative power. It is readily soluble in water and is an excellent substitute for tincture of iodine for the treatment of infected wounds, pre-operative sterilisation of the skin, etc. Extensively used in pyelitis, cystitis, gonococcal urethritis, gonorrhœa, vulvovaginitis, &c.

MERCUROCHROME is issued in bottles of 10, 25, 100, 250, and 500 grammes respectively, also in sealed tubes, each containing 5.7 grammes, the quantity of the crystals required to make 1 pint of 1% solution, and in bottles each 25 c.c. of 1% solution.

PREPARED IN THE LABORATORIES OF

MAY & BAKER, LTD., BATTERSEA, LONDON, S.W. 11.

STOCKS are held in the BRITISH EMPIRE by—

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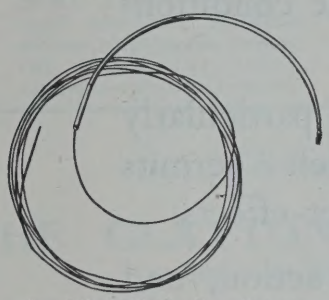
also by MAY & BAKER, LTD., c/o WESTCOTT & CO., 6, Avenue Edward VII, SHANGHAI, CHINA.

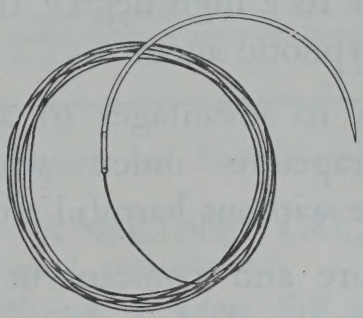
London Hospital Eyeless Needles

WITH L.H. CATGUT

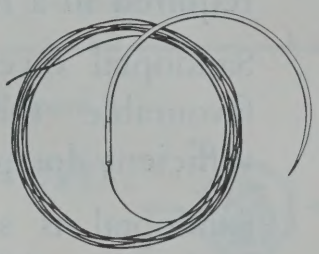
The London Hospital Eyeless Needles have been specially designed to avoid the doubling of the suture necessary in using needles with pierced eyes. They are fitted with tubular ends into which the sutures are firmly fixed, thus enabling the needles to be used with single strands. These needles are finely ground, sharp pointed and packed sterile in tubes for immediate use. Special precautions are taken to avoid any rusting of the needle after it has been packed.



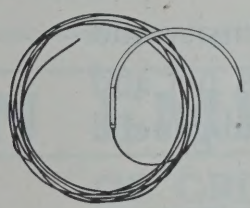
Curved Needle (Keith or Bantock) 3 side cutting edge. Sizes 3/0, 2/0, 0, 1, 2, 3. In boxes of 3 tubes, **4/6**



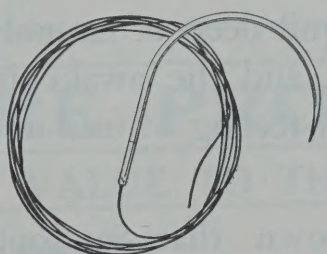
Curved Mayo Robson Stomach Needle, Sizes 4/0, 3/0, 2/0, 0, 1, 2, 3. In boxes of 3 tubes, **4/6**



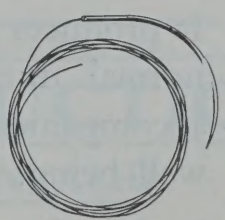
Moynihan's Model. In 3-tube box, **4/6**



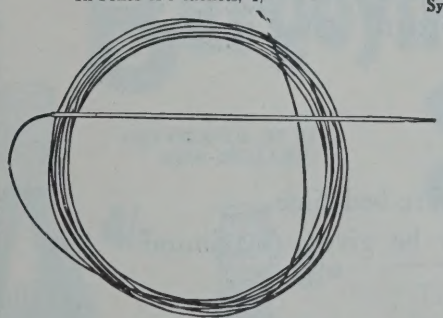
Ordinary Curved Intestinal Needle. Size 0. In boxes of 3 tubes, **4/6** In boxes of 3 cachets, **4/-**



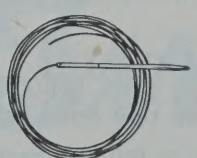
Symond's Round-Bodied Model. In boxes of 3 tubes, **4/6**



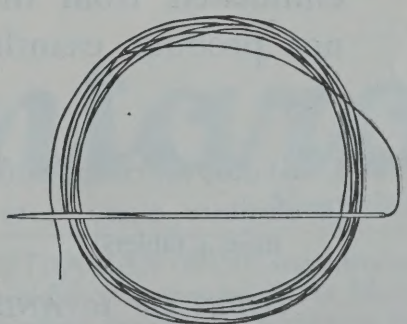
Curved Ophthalmic Needle (also for plastic work). Size 6/0. In boxes of 3 tubes, **4/6**



Straight Stomach Intestinal Needle. Sizes 4/0, 3/0, 2/0, 0, 1, 2, 3, 4.
In boxes of 3 tubes with single needles, **4/6**
" 12 " " **16/-**
" 3 " 2 needles **7/6**
" 12 " " **25/-**



Straight Squint Needle (Green model), $\frac{3}{4}$ in. Size 6/0.
In boxes of 3 tubes, **4/6**
" 12 " **16/-**



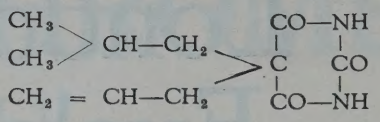
Straight Needle (Keith or Bantock), 2 in., 3-side cutting edge. Sizes 2/0, 0, 1, 2, 3.
In boxes of 3 tubes, **4/6** In boxes of 12 tubes, **16/-**

London Hospital Eyeless Needles are obtainable from

Allen & Hanburys Ltd. 48 Wigmore Street London W.1.

and all leading Surgical Equipment Houses.

SANDOPTAL



A NEW HYPNOTIC

ISOBUTYL-ALLYL-MALONYLUREA

Clinical and laboratory tests have shown that Sandoptal fulfils to a high degree the conditions required in a hypnotic agent.

Sandoptal owes its advantages to a particularly favourable therapeutic index which permits sufficient dosage without harmful after-effects.

Sandoptal is sure and constant in action, and well tolerated by the aged.

It produces tranquil sleep of natural intensity and normal duration, and the awakening is net and accompanied by a feeling of freshness and general well-being.

It has been shown that Sandoptal is rapidly eliminated from the organism and that it does not produce exanthema.

DOSAGE

Usual dose : 1 tablet, half to one hour before bed-time.

In obstinate cases : 1 to 3 tablets may be given (maximum dose 4 tablets).

TUBES OF 10 AND BOTTLES OF 100 TABLETS

AGENCY

SANDOZ CHEMICAL WORKS

Pharmaceutical Department

5, WIGMORE STREET

LONDON, W.1

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The new water-soluble analeptic with a camphor action

VIDE "*THE LANCET*," JUNE 27, 1925, and FEBRUARY 5, 1927.

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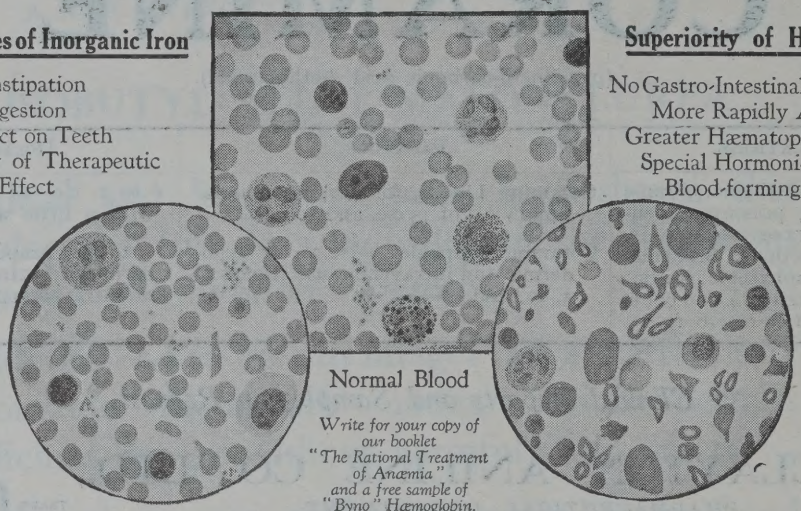

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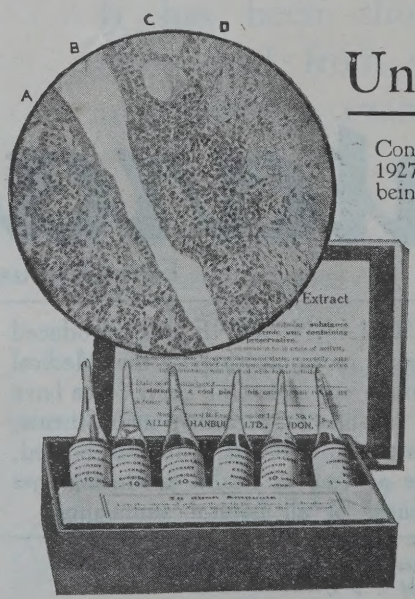

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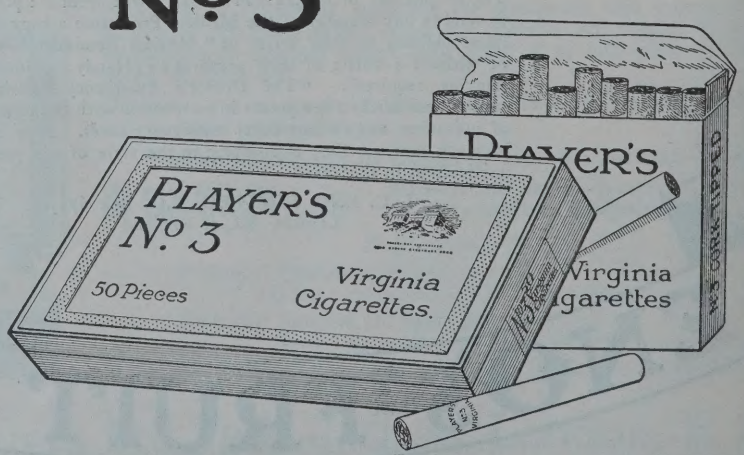

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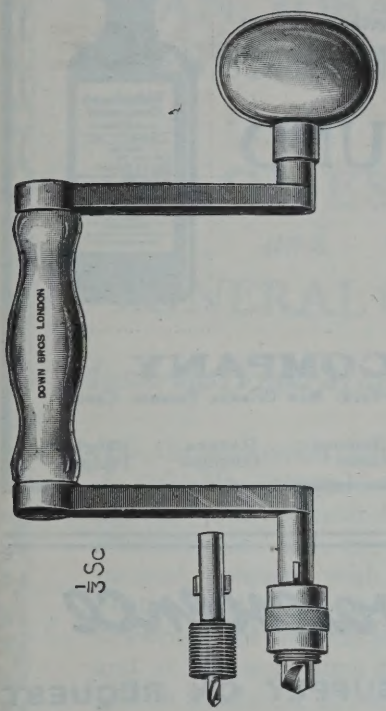

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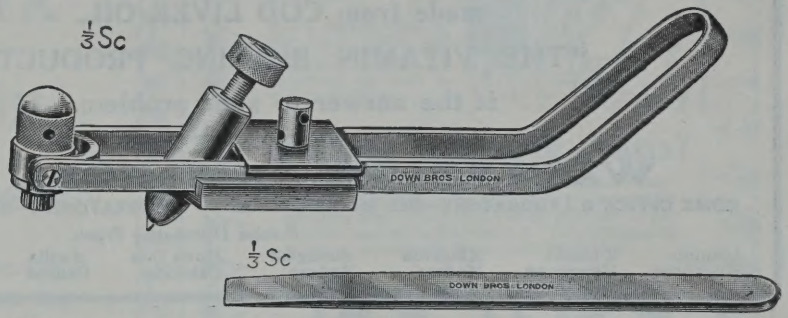

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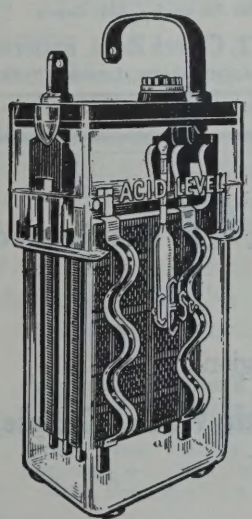

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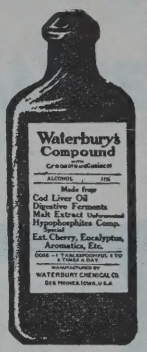

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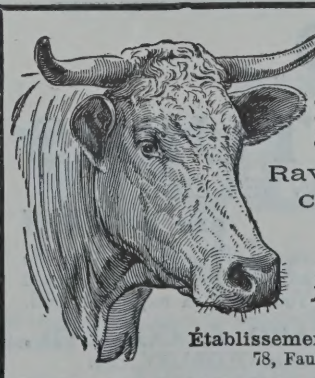

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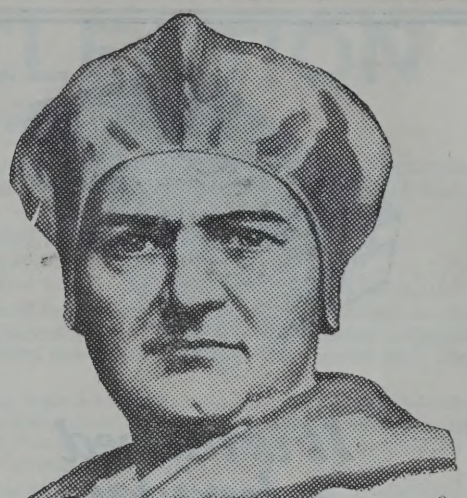

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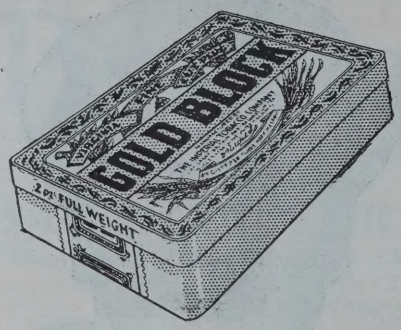

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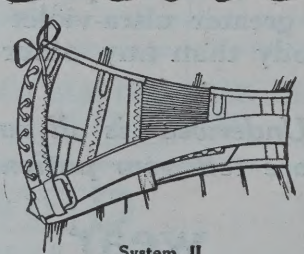

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A Course of Lectures on the ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM will be given on Fridays at 12 noon if there are sufficient applicants. Fee £2 2s.

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Medical Act (1886). (49 and 50 Vict. Ch. 48.)

NOTICE IS HEREBY GIVEN that, pursuant to the Medical Act (1886), an ELECTION OF TWO MEMBERS of the General Council of Medical Education and Registration of the United Kingdom, to represent the registered Medical Practitioners resident in ENGLAND, is about to be held.

Every registered Medical Practitioner is qualified to be nominated as a candidate.

Each candidate must be nominated by a separate nomination paper.

Every registered Medical Practitioner resident in England is entitled to take part in nominating two candidates.

Every nomination paper must state the name, registered address, and registered qualification or qualifications of the candidate nominated; it must be signed by not fewer than twelve registered Medical Practitioners, resident in England, as nominating such candidate; and the registered address and registered qualification or qualifications of each one so signing must be appended to his signature.

Every nomination paper, accompanied by a declaration in writing signed by the person nominated, acknowledging that he consents to be nominated, must be delivered, by post or otherwise, on or before the 13th day of October, 1928, addressed to Mr. NORMAN C. KING, the Registrar, at the Medical Council Office, 44, Hallam-street, London, W. 1, where forms of nomination papers may, on application by post or otherwise, be obtained.

Every nomination paper in respect of which any of these Regulations has not been complied with, or which is not received at 44, Hallam-street, London, W. 1, on or before October 13th, 1928, will be invalid.

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The Past and Present Students' Dinner will be held the same evening at 7 for 7.30 at the Trocadero Restaurant, Piccadilly-circus, W.1. (The Secretaries to the Dinner Committee are Dr. Ernest Playfair and Dr. H. A. Richards.)

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Situated in the Upper Speyside district of Inverness-shire. One of the highest inhabited districts in Britain.—"The Switzerland of the British Isles." Bracing and dry mountain climate, well sheltered. Sanatorium specially built for the Open-Air Treatment of Tuberculosis. Opened in 1901. Elevation nearly 900 ft. above sea-level. Central Heating. Electric light throughout buildings and in rest shelters. FULLY EQUIPPED X-RAY PLANT. All forms of Treatment available, including facilities for Treatment by artificial Pneumothorax and Ultra-Violet Rays for Surgical cases of Tuberculosis. **A few rooms are now reserved for surgical cases not requiring immediate operation.** Terms: £4 6s. 8d. to £6 6s. 0d. per week **inclusive, no extras. FELIX SAVY, M.B., Ch.B., Physician-Supt.**—*For Particulars apply:* **Wm. KEIR, Secretary.**

MUNDESLEY SANATORIUM.

Specially built for the treatment of Pulmonary and other forms of Tuberculosis. Aspect S.S.W. on a carefully chosen site. Pure, bracing air. High sunshine record. Heliotherapy. Arc-light treatment. One mile from the coast. Electric light throughout. X-Ray installation. Full day and night Nursing Staff. Wireless throughout.

Resident Physicians:

S. VERE PEARSON, M.D.(Camb.), M.R.C.P.(Lond.)
GEOFFREY LUCAS, B.A. (Camb.), M.D. (Durham)
L. WHITTAKER SHARP, M.B.(Camb.).

Apply: Mr. D. C. FORD, Secretary,
The Sanatorium, Mundesley, Norfolk.

EAST ANGLIAN SANATORIUM

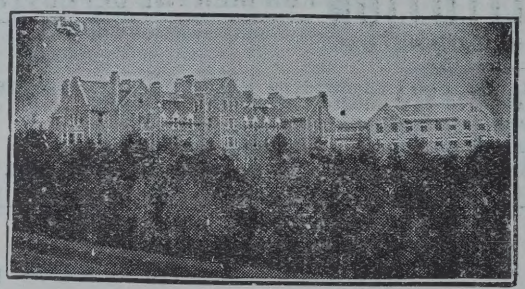
This Sanatorium was specially built for the treatment of **Pulmonary and other forms of Tuberculosis**, and is situated on an ideal site facing S.S.E.—very sunny district in the "Constable" Country. **Special Treatment by artificial Pneumothorax (X-ray Controlled).** Electric lighting throughout, and radiators and wireless in all rooms.

TERMS: From 4 to 8 guineas per week.

On the estate of 330 acres there is ample opportunity for training in General Farming, Poultry Farming, Angora Rabbit Breeding, Gardening, &c., and various Handicrafts.

Med. Supt.: Dr. Jane Walker;
Asst. Med. Supt.: Dr. Eleanor Soltau; and other Medical Officers.
For full particulars, illustrated prospectus, etc., apply to the SECRETARY, East Anglian Sanatorium, Nayland, near Colchester.
Telephone and Telegrams: NAYLAND 1.

TOR-NA-DEE SANATORIUM
MURTLE, DEESIDE, ABERDEENSHIRE.



Medical Director: DAVID LAWSON, M.D., F.R.S.E.

FULLY EQUIPPED WITH *EVERY MODERN APPLIANCE* FOR THE DIAGNOSIS AND TREATMENT OF ALL FORMS OF TUBERCULOSIS & ALLIED DISEASES.

Physician Superintendent: J. M. JOHNSTON, M.B., D.P.H., etc.
Full particulars and Prospectus on application to the Secretary.
INCLUSIVE TERMS: SEVEN GUINEAS A WEEK.

RUTHIN CASTLE
(Formerly Duff House, Banff).

The first Private Hospital in the United Kingdom to be fully provided with a whole-time specially qualified Staff of Doctors, Analytical Chemists, Bacteriologists, Radiologists, Nurses, Dietists, Masseurs, and Masseuses, and a full equipment of Laboratories, X-rays, Electrocardiograph, Artificial Sunlight, and Medical Baths.

The Hospital is equipped for the diagnosis and treatment of any form of ill-health, except Mental and Infectious Diseases. The fees are inclusive.

The climate is mild and the neighbourhood beautiful.

Apply: THE SECRETARY,
Ruthin Castle, North Wales.

Telegrams: CASTLE, RUTHIN. *Telephone:* 66 RUTHIN.

FARMWOOD, ASCOT

FOR THE TREATMENT OF TUBERCULOSIS

This Sanatorium is situated at SUNNINGHILL, amid the Pines. It stands 500 feet above sea level. All forms of treatment are available. X-ray Installation. Full Nursing Staff.
One hour by road or rail from London.
Resident Medical Superintendent—BERKELEY N. ASH, M.R.C.S., L.R.C.P., late Physician, Pendyffryn Hall, North Wales; 1st M.O. King Edward VII. Sanatorium, Midhurst.
For full particulars apply to the SECRETARY, FARMWOOD, ASCOT.

PRIOR PLACE SANATORIUM

HEATHERSIDE, CAMBERLEY.

RECENTLY OPENED FOR THE TREATMENT OF PULMONARY TUBERCULOSIS.

WELL SITUATED ON HIGH GROUND AND SURROUNDED BY PINES AND HEATHER.

RESIDENT MEDICAL SUPERINTENDENT: Dr. H. O. BLANFORD, late Medical Superintendent, King Edward VII. Sanatorium, Midhurst, to whom applications for particulars may be made.

"SCHATZALP"

6120 ft. above sea level — **Sanatorium for Diseases of the Lungs** — 985 ft. above Davos-Platz

Own post and telegraphic office in the house.

Head Doctor: Dr. ED. C. NEUMANN. House Doctor: Dr. JOOS WOLF.

First-class curative establishment, sunny situation, sheltered from wind and dust. Beautiful, laid-out walks through own pine woods.

EVERY REFINED COMFORT.

Suite with bath—Rooms with w.c.—Running hot and cold water.
Light signals—Telephonic communications in rooms.
Full Pension, including medical attention, from Fr.22. upwards.

All further information and Prospectus from "Wirtschaftliche Direktion." "Schatzalp," near Davos-Platz, Switzerland.

HELOUAN

(EGYPT)

THE PRINCIPAL HEALTH RESORT IN EGYPT.

Sulphur - Saline Springs.

ETABLISSEMENT THERMAL. Sulphur Baths. Massage. Electro-Therapeutics, etc. The best winter health resort. Warm, dry, equable climate specially indicated for chronic bronchitis, emphysema, bronchiectasis, etc. Average eight hours' daily sunshine in winter. Situated in the desert, 16 miles south of Cairo. Special arrangements for Heliotherapy.

The Baths are suitable for treatment of **Rheumatism, Gout, Rheumatoid Arthritis, etc. Albuminuria, Chronic Skin Diseases.**

Golf, Tennis, Excursions to Pyramids and other places of interest.

GRAND HÔTEL, HELOUAN.

First-class Hotel. Special arrangements for invalids.

Under the same management as the Baths. Open November to April.

For particulars apply to the Director, GRAND HÔTEL, HELOUAN.

PALACE SANATORIUM

Montana, Switzerland.

For the Treatment of TUBERCULOSIS.

Altitude 5000 feet. Lakes and Pine Forests.
Only 22 hours from Victoria Station.
MODERN EQUIPMENT, including Roof Solarium, Throat Room, Clinical Laboratory, and recent X-Ray Plant.
Day and Night Staff of English Trained Nurses.

Resident Physicians: HILARY ROCHE, M.D. (Melbourne), M.R.C.P. (London), Tuberculous Diseases Diploma (Wales); F. A. H. SIMMONDS, M.B., Ch.B. (Cantab.); GEORGE MCCRACKEN, L.R.C.P., L.R.C.S. (Edin.), L.R.F.P.S. (Glasgow).

PERFECT WINDLESS WINTER CLIMATE.
Sunshine 7¾ hours on the shortest day.

Particulars from MEDICAL SUPERINTENDENT, or from THE SECRETARY, 5, Endsleigh Gardens, London, W.C. 1.

PEEBLES HYDRO

Beautifully situated 600 feet above sea level. Facing South, completely sheltered from North and East. 21 miles from Edinburgh. All modern Baths, Douches, Massage and Electrical Treatment, Ultra-Violet Radiation. Physician in attendance.

IDEAL HEALTH RESORT

Electric Light, Central Heating, Electric Lift, Three Billiard Tables, Ball Room, Winter Garden, Swimming Bath, Hard and Grass Tennis Courts, Badminton, Croquet Lawn, Golf Course. Prospectus from Manager. 'Phone: Peebles 2.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Physicians: G. C. R. Harbinson, M.B., B.Ch.
R. MacLelland, M.D., C.M. (Edin.).

Prospectus and full information on application to the Manager.

THE RESIDENTIAL TREATMENT OF ALCOHOLISM & DRUG ADDICTION.

RENDLESHAM HALL

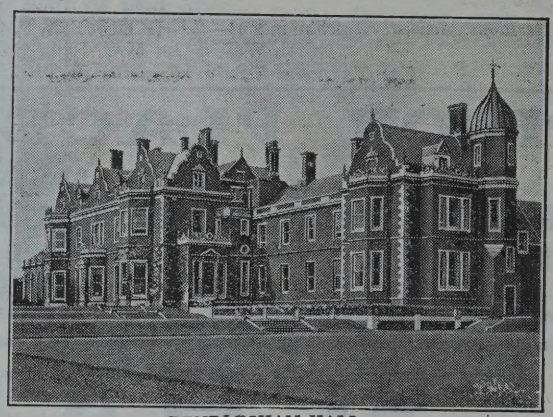
(Postal Address), WOODBRIDGE, SUFFOLK

RENDLESHAM HALL, which is open to receive patients, is essentially a Sanatorium. Its daily life and routine are that of an ordinary comfortable holiday or health resort, or of a large country house. Each patient has all the privileges of a guest consistent with the prescribed medical treatment.

Rendlesham Hall has 45 Bedrooms, and about 450 acres of Gardens and Park. It has also a private Nine-hole Golf Course, Tennis and Croquet Lawns, and Bowling Green.

Illustrated Booklet, giving particulars as to terms, etc., can be had on application to THE RESIDENT MEDICAL SUPERINTENDENT.

Telegrams and Telephone:
WICKHAM MARKET 16.



RENDLESHAM HALL

To those desiring to be nearer London,

THE MANSION, BECKENHAM PARK, BECKENHAM,

as carried on for the last twenty years, is available.

Booklet and particulars from THE RESIDENT MEDICAL SUPERINTENDENT.

Telephone: RAVENSBOURNE 0648. *Telegrams:* NOROTORIUM, BECKENHAM

Proprietors: THE NORWOOD SANATORIUM, LIMITED.

INEBRIETY.

Telephone: 16 Rickmansworth

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and others for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the banks of the river Colne. Full sized billiards, tennis, croquet, bowls. Golf (Moor Park and Sandy Lodge) close by.—Apply to F. S. D. HOGG, M.R.C.S., &c., Res. Med Supt

FUNCTIONAL NERVOUS DISORDERS ALCOHOLISM and DRUG ADDICTION

at CALDECOTE HALL, NUNEATON.

This Mansion has been opened upon the most modern and scientific lines both physical and mental.

Resident Medical Superintendent—
A. E. CARVER, M.A., M.D., M.R.C.S., D.P.H., D.P.M.

Full particulars upon request.
Prospectus from the SECRETARY, 40, Marsham Street, Westminster, S.W.1

ALCOHOLISM, DRUG HABIT, and NEURASTHENIA.

BAY MOUNT, PAIGNTON.

Ladies and Gentlemen treated in small Private Home
EXCELLENT RESULTS FROM MODERN TREATMENT.
COOL SUMMER BREEZES. AMPLE AMUSEMENT.
MODERATE INCLUSIVE TERMS.
Prospectus, report, etc., from STANFORD PARK, Res. Med. Supt.
Phone: Paignton 5110.

Telegraphic Address: "Relief, Old Catton." Telephone: 290 Norwich.

NERVOUS & MENTAL AFFECTIONS.

Ladies only received.

The Grove, Old Catton, Norwich.—**A High-class Home for the Curative Treatment of Nervous Affections. Voluntary Boarders are also received without certificates.**

For full particulars apply to the Misses MCLINTOCK, or to Dr. S. BARTON, 34, Surrey-street, Norwich, Visiting Physician.

EPILEPSY

Owing to extensions there are at present a few Vacancies at the

DAVID LEWIS COLONY

for Ladies and Gentlemen who have Epilepsy but are of good intelligence and sound mind.

Colony life gives to most people who have epilepsy the best chance of happiness and contentment.

Apply to the MEDICAL SUPERINTENDENT, THE DAVID LEWIS COLONY, WARFORD, ALDERLEY EDGE.

LITTLETON HALL, BRENTWOOD, ESSEX

(18 MILES FROM LONDON.)
400 feet above sea.

HOME for few LADIES Mentally Afflicted. Large grounds. Liverpool st. 26 min. Stations: Brentwood, Shenfield, one mile. Boarders Received. Apply Dr. Haynes. Telephone and Telegrams: Haynes Brentwood 45.

Grove House, All Stretton, Church

STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.

Climate healthy and bracing.

Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

MALLING PLACE, KENT

For LADIES and GENTLEMEN of Unsound Mind.

Terms Moderate. Apply to Resident Medical Superintendent

Telegrams: ADAM, WEST MALLING. Telephone: No. 2 MALLING

THE WARNEFORD, OXFORD.

HOSPITAL FOR MENTAL DISORDERS.

President: The Right Hon. the EARL OF JERSEY.

This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. Voluntary Boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

CHEADLE ROYAL,

CHEADLE, CHESHIRE.

This Registered Hospital for MENTAL DISEASES with its seaside branch Glan-y-don, Colwyn Bay, is for the treatment and care of PRIVATE PATIENTS of the UPPER and MIDDLE CLASSES. Voluntary Boarders received.

For terms, &c., apply to the Medical Superintendent, J. A. C. Roy, M.B., who may be seen in Manchester by appointment. Telephone: No. 163 GATLEY.

CLARENCE LODGE,

CLAPHAM PARK, LONDON.

Situated in 3½ acres of secluded gardens.

HOME FOR TWELVE MENTAL PATIENTS (LADIES).

Well appointed private house, Home comforts and Trained Nursing Staff. Eminent Mental Specialist Visiting Physician.

A new feature in the Home is the Uitra Violet Ray Treatment.

Station: Clapham Common Tube.

Phone: Brixton 0494

Apply: MRS. THWAITES.

THE COPPICE, NOTTINGHAM,

HOSPITAL FOR MENTAL DISEASES.

President: The Right Hon. the EARL MANVERS.

This Institution is exclusively for the reception of a limited number of PRIVATE PATIENTS of both sexes, of the UPPER and MIDDLE CLASSES, at moderate rates of payment. It is beautifully situated in its own grounds, on an eminence a short distance from Nottingham, and commands an extensive view of the surrounding country; and from its singularly healthy position and comfortable arrangements affords every facility for the relief and cure of those mentally afflicted. For terms, &c., apply to the Medical Superintendent.

SPRINGFIELD HOUSE

Phone: BEDFORD 3417.] **Near BEDFORD**

For Mental Cases with or without Certificates

Ordinary Terms Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

For forms of admission, &c., apply to the Drs. BOWER, as above, or at 15, Duchess-street Portland-place, W.1, on Tuesdays from 4 to 5.

STRETTON HOUSE

Church-Stretton, Shropshire.

A PRIVATE HOME for the treatment of gentlemen suffering from Mental and Nervous Illness, including the allied Disorders of Alcoholism and the Drug Habit. All types of early Mental and Nervous Cases are received without certificates as Voluntary Boarders. Bracing hill country. See "Medical Directory," p. 2092.—Apply to Medical Superintendent. 'Phone 10 P.O., Church-Stretton.

Gentlemen Only.

PLOMBIÈRES TREATMENT

(COLON LAVAGE)

Telegrams: "Sharmanite, London."
Telephone: Mayfair 1324.

Mr. EDGAR W. SHARMAN,
66, Gloucester Place,
Portman Sq., London, W.1.

Bucks Mental Hospital,

Stone, near Aylesbury.

The Visiting Committee of this Hospital can receive PRIVATE PATIENTS at a minimum weekly charge of 1½ guineas. No vacancies for female cases at present.

Apply to the Medical Superintendent.

Physician of wide experience in the

Treatment of Mental Disorder has a VACANCY in his Private Home for a Patient—voluntary or certified. Extensive lawns. Beautiful gardens. Occupations. In-door and out-door games. Motoring. Easy distance from town. Terms moderate.—Address, No. 862, THE LANCET Office, 423, Strand, W.C.2.

Saint Mark's Hospital for Cancer,

FISTULA AND OTHER DISEASES OF THE RECTUM, City-road, London, E.C.1.—HOUSE SURGEON (Male) required. Must be fully qualified. Salary £75 per annum, with board, residence, and laundry.

The appointment is for a minimum of six months from 1st November next.

Applications, with copies of testimonials, must reach the Secretary (from whom further particulars may be obtained) not later than Saturday, 6th October, 1928.

The Queen's Hospital for Children,

Hackney-road, London, E.2.

The Committee invite applications for the post of PHYSICIAN-IN-CHARGE of the Skin Department.

Candidates, who must be Fellows or Members of the Royal College of Physicians of London, should send in their applications, with copies of testimonials, on or before 15th October.

Information re duties and times of attendance on application.

T. GLENTON-KERR, Secretary.

3rd September, 1928. Telephone: Bishopsgate 6305 and 2534

London Temperance Hospital,

Hampstead-road, N.W.1.

Applications are invited for the post of HOUSE PHYSICIAN which will become vacant on the 15th October, 1928. The appointment is for a period of six months at a salary of £100 per annum.

Candidates must send applications, stating qualifications, age &c., with copies of not more than three testimonials, by Thursday, 4th October, addressed to the Secretary.

London Temperance Hospital,

Hampstead-road, N.W.1.

Applications are invited for the post of RESIDENT MEDICAL OFFICER. The appointment will be for a period of six months at a salary of £175 per annum and will date as from 11th October, 1928.

Candidates must submit applications, stating qualifications, age, &c., with copies of not more than three testimonials, by Thursday, 4th October, addressed to the Secretary.

London Temperance Hospital,

Hampstead-road, N.W.1.

Applications are invited for the post of CASUALTY OFFICER which will become vacant on 15th October, 1928. The appointment will be for a period of six months at a salary of £120 per annum.

Candidates must submit applications, stating qualifications, age, &c., with copies of not more than three testimonials, by Thursday, 4th October, addressed to the Secretary.

Paddington Green Children's Hospital

(Incorporated), London, W.C.2.—HOUSE SURGEON. This appointment will become vacant on November 1st, 1928. Gentlemen (unmarried) are invited to send in their applications with copies of three testimonials, addressed to the undersigned not later than October 12th, 1928. Salary at the rate of £150 per annum, with board and residence. Candidates who have held a responsible Resident Hospital appointment are preferred. The appointment is for a period of five months.

JAMES A. HAMLIN, Secretary.

Hampstead Hospital for Children,

College-crescent, N.W.3. (65 Beds.)

Applications are invited for the post of RESIDENT MEDICAL OFFICER (Man or Woman). Salary at the rate of £100 per annum, with board, lodging, and laundry. The appointment will be for six months in the first instance. Candidates must be fully qualified and registered under the Medical Act. Experience as an Anæsthetist desirable.

Applications, stating qualifications and experience, and accompanied by three recent testimonials, must be sent to the Secretary before Saturday, 20th October, 1928, endorsed "R.M.O."

Hospital of St. John and St. Elizabeth,

60, Grove End-road, London, N.W.8.—Applications are invited for the post of RESIDENT HOUSE SURGEON (Male). The appointment will be for six months from November 1st, 1928. Salary at the rate of £75 per annum, with full board. Applications, together with three recent testimonials, should reach the undersigned on or before October 3rd, 1928.

F. DUDLEY HOBBS, Secretary.

Royal National Orthopædic Hospital.

SURGICAL REGISTRARS.—The Committee invite applications for the appointment of four Registrars (Male) as from November 1st. Honorarium £105 per annum. The appointments are for twelve months, renewable for a further twelve months on the recommendation of the Medical Board. Applications, with copies of three recent testimonials, should reach the Secretary, 234, Gt. Portland-street, W.1, not later than October 12th.

Hospital for Consumption and Diseases

OF THE CHEST, Brompton, S.W.3.—The Committee of Management invite applications for the post of HOUSE PHYSICIAN (for which there are four vacancies). The duties include work in the Out-patient Department as well as in the Wards, and one of the selected candidates will also be appointed Assistant to the Tuberculosis Officer for the local Tuberculosis Dispensary at the Hospital. Applications, with copies of testimonials, must be sent in not later than Saturday, 13th October, 1928, addressed to the Secretary. The appointment is for six months, commencing on 1st November, with an honorarium of £50.

FREDERICK WOOD, Secretary.

Brompton, September, 1928.

The Belgrave Hospital for Children

(Incorporated), 1, Clapham-road, S.W.9.

The Committee of Management invite applications for the post of HOUSE SURGEON and ASSISTANT HOUSE PHYSICIAN which will become vacant on October 31st.

Applicants (men) must be fully qualified and registered.

The appointments are for six months with board, residence, and washing provided.

Salary at the rate of £100 per annum in each case.

Applications, with copies of testimonials, stating age, to be forwarded on or before Wednesday, October 3rd.

By order.

THOS. CLAPHAM, Secretary

The Prince of Wales's General

HOSPITAL, Tottenham, N.15.

Applications are invited for the following posts:—

HOUSE SURGEON	.. £120 per annum,
SPECIAL HOUSE SURGEON	.. £120 per annum,
HOUSE PHYSICIAN ..	.. £120 per annum,
JUNIOR HOUSE SURGEON	.. £90 per annum,
JUNIOR HOUSE PHYSICIAN	.. £90 per annum,

with residence, board and laundry.

The appointments are held for six months, but the holders are eligible for re-appointment for a further term.

Candidates (male) must be fully qualified and registered, and applications (on prescribed form), together with copies of three recent testimonials, should be sent to me on or before the first post on Monday, October 1st.

Appointments will be made by the Governors on the 20th October. Duties to commence 1st November.

7th September, 1928. FREDK. W. DREWETT, Director.

Metropolitan Borough of Greenwich.

APPOINTMENT OF A MEDICAL OFFICER FOR MATERNITY AND CHILD WELFARE WORK.

The Council of the Metropolitan Borough of Greenwich is prepared to receive applications from persons qualified to act as Medical Practitioners for the appointment of Medical Officer of the Maternity and Child Welfare Centres established in the Borough of Greenwich.

The person to be appointed must have had Hospital Obstetric experience, will be personally responsible for the medical care and treatment of certain patients at the Maternity Home, and will act generally as an Assistant Medical Officer of Health under the direction and supervision of the Medical Officer of Health, who is the Administrative Medical Officer of the Maternity Home.

The salary will be at the rate of £600 per annum rising by annual increments of £50 to a maximum of £750 per annum.

The successful candidate will be required to devote the whole of his or her time to the service of the Council and shall not engage in private practice, except when called in by the medical men in the district.

The appointment will be subject to the provisions of the Councils Superannuation Act, to the approval of the Ministry of Health, and will be terminable by three months' notice on either side. The person appointed will be required to reside within one mile of the Maternity Home.

Applications must be made on forms to be obtained from the undersigned, stating age, qualifications, and experience, accompanied by copies of not more than three testimonials, and must be sealed up and endorsed "Assistant Medical Officer," and reach me not later than 12 o'clock noon on Thursday, 4th October next.

Canvassing Members of the Council, either directly or indirectly will be a disqualification.

FREDERICK J. SIMPSON, Town Clerk.

Town Hall, Greenwich, S.E.10, September, 1928.

St. John's Hospital, Lewisham, S.E.13

Applications are invited for the appointment of RESIDENT MALE CASUALTY OFFICER for a period of three months, commencing the 1st of November. Salary £100 per annum. The successful applicant will be expected, if found suitable, to succeed to a resident house appointment for a further period of six months.

Applications should be sent to the Secretary by October 10th, 1928.

St. Andrew's Hospital, Dollis Hill,

London, N.W.2.—Vacancy for TWO RESIDENT MEDICAL OFFICERS, Male, British. Salary: Senior £150, Junior £120. Six or nine months' appointment. The posts are very suitable for candidates reading for higher degrees.

Candidates must possess registered medical and surgical qualifications of the United Kingdom.

Applications, by letter, with copies of three recent testimonials and a certificate of ability to administer anæsthetics, should be sent not later than October 6th to the Secretary.

Hampstead General and North-West

LONDON HOSPITAL, Haverstock Hill, N.W.

APPOINTMENT OF A HOUSE SURGEON.

Applications are invited from registered Medical Practitioners for an appointment of House Surgeon vacant on November 1st next. The salary will be at the rate of £100 per annum, together with board, residence, &c., and the term will be for six months.

Applications, stating age, qualifications, experience, together with copies of not more than three testimonials, should reach the Secretary not later than October 13th next.

Hampstead General and North-West

LONDON HOSPITAL, Haverstock Hill, N.W.3.

APPOINTMENTS OF CASUALTY MEDICAL OFFICER AND CASUALTY SURGICAL OFFICER.

Applications are invited from registered Medical Practitioners for the positions of Casualty Medical Officer and Casualty Surgical Officer at the Out-patient Department of the Hospital, Bayham-street, Camden Town, which will become vacant on November 1st next. The salary for each post will be at the rate of £100 per annum, together with board, residence, &c., and the term will be for six months.

Applications, stating age, qualifications, experience, together with copies of not more than three testimonials, should reach the Secretary not later than October 13th next.

Royal Chest Hospital, City Road,

E.C.1. (Royal Northern Group of Hospitals.)

Applications are invited for the following posts:—

RESIDENT MEDICAL OFFICER. Vacant on 1st November. The appointment is for six months, when re-election is required. Salary at the rate of £150 per annum, with board, residence, and laundry.

HOUSE PHYSICIAN. Vacant on 1st November. The appointment is for six months. Salary at the rate of £100 per annum, with board, residence, and laundry.

Applications, with copies of testimonials, should be sent on or before the 10th October to the undersigned, from whom forms of application, rules and further particulars can be obtained.

GILBERT G. PANTER, Secretary.

Royal Northern Hospital, N.7.

Royal Free Hospital and London

(R.F.H.) SCHOOL OF MEDICINE FOR WOMEN.

Applications are invited for the following appointment, vacant on January 1st, 1929:—

PATHOLOGICAL DEPARTMENT.

RESIDENT ASSISTANT PATHOLOGIST, £150, with residence in the Hospital.

Applications, accompanied by copies of not more than three testimonials and the names of not more than two persons to whom reference can be made, should reach one of the undersigned from whom further particulars may be obtained, by the first post on Friday, October 26th, 1928. Seven copies of all documents must be furnished.

REGINALD R. GARRATT, Secretary,
Royal Free Hospital, W.C.1.
LOUIE M. BROOKS, Warden and Secretary,
London (R.F.H.) School of Medicine
for Women, W.C.1.

September 28th, 1928.

County of London

The London County Council invites applications for appointment as EIGHTH ASSISTANT MEDICAL OFFICER (Male) in the Mental Hospitals Service. Candidates must be under thirty-five years of age and be registered to practise both in Medicine and Surgery in England. Salary £300 a year, rising by annual increments of £25 to £400 a year, plus fluctuating temporary additions, making the total commencing remuneration approximately £414 a year. No emoluments. Charges made for board, lodging, &c. (at present £2 9s. weekly) if required to be resident. Candidates appointed will be pensionable under the Asylums Officers' Superannuation Act, 1909. Form of application on which full particulars are given, can be obtained from the Acting Chief Officer, Mental Hospitals Department, County Hall, Westminster Bridge, S.E.1. Completed applications must be received by Tuesday, 16th October, 1928. Canvassing disqualifies.

MONTAGU H. COX, Clerk of the London County Council.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.2.

—Applications are invited for the post of SENIOR RESIDENT MEDICAL OFFICER (Male), which becomes vacant on November 1st, 1928. Salary £140 per annum, with board, residence, and laundry. The appointment is for six months.

Candidates must be duly registered under the Medical Acts, and the Mildmay Council is anxious that they should be fully in sympathy with the religious work of the Hospital.

Applications, with copies of recent testimonials, should be sent to the Medical Superintendent by October 8th.

The Ilford Emergency Hospital, Essex.

(70 Beds).—Wanted, JUNIOR HOUSE SURGEON (Male, unmarried). Medical and Surgical qualifications. Salary £90 per annum, with apartments, board, and laundry. Applications, stating age, qualifications and experience, with copies of testimonials, should be sent to the Secretary immediately.

Royal South Hants and Southampton HOSPITAL.

—Required on November 1st, 1928, the following Officers :—

JUNIOR HOUSE SURGEON. Salary £130 per annum.

CASUALTY OFFICER. Salary £120 per annum.

Candidates must be unmarried and willing to engage for a period of six months. Candidates for the Senior post are requested to state whether they wish to be considered for the Junior post as an alternative.

Applications, stating age, with copies of testimonials (limited to five), to be sent to the undersigned before October 9th.

HY. TRUSSON, Secretary.

The Royal Infirmary, Doncaster.

(121 Beds.)

THIRD HOUSE SURGEON (Male) required immediately. Duties include Ophthalmic, Medical, and Casualty work. Opportunity for gaining excellent experience. Appointment is for six months, and successful candidate is eligible for reappointment and probable promotion.

Salary £150 per annum, with board, residence, and laundry.

Applications, with full particulars, should be addressed to the undersigned by Tuesday, October 2nd.

J. LAWRENCE MEARS, Secretary-Superintendent.

September 25th, 1928.

Lincoln County Hospital.

Wanted, for 1st November, a JUNIOR HOUSE SURGEON, male, unmarried. Salary at the rate of £150 per annum, rising to £200 per annum at the conclusion of six months' approved service. Board, residence, and washing will also be provided.

Every candidate for the appointment must be registered under the Medical Acts.

Applications, stating age and other particulars, with copies of testimonials (not more than three), are to be sent to the undersigned, from whom further particulars may be obtained.

ARTHUR MOORE, Secretary-Superintendent.

Lincoln, 24th September, 1928.

Addenbrooke's Hospital, Cambridge.

Applications are invited for the post of HOUSE SURGEON to the Special Departments. The appointment will be for six months from October 16th, 1928, but is terminable at an earlier date by one month's written notice on either side. Salary at the rate of £130 per annum, with board, residence, and laundry. Candidates (male), who must be unmarried and duly registered, are requested to forward their applications, stating age, qualifications, &c., together with copies of not more than four testimonials, to the undersigned on or before Wednesday, October 3rd, 1928.

W. H. HEAD, Secretary-Superintendent.

County Mental Hospital, Winwick, Warrington.

—ASSISTANT MEDICAL OFFICER (Male) required. Commencing salary £350 per annum, rising by annual increments of £25, to a maximum of £450 per annum, with board, furnished apartments, and washing, valued at £150 per annum for superannuation purposes.

Candidates must be registered under the Medical Act.

The appointment is subject to the provisions of the Asylums Officers' Superannuation Act, 1909.

Applications, stating age, whether married or single, together with full particulars, should be received by the Medical Superintendent not later than the 3rd October, 1928.

Royal National Hospital for Consumption AND DISEASES OF THE CHEST, Ventnor, Isle of Wight.

A Male JUNIOR RESIDENT MEDICAL OFFICER required, of British Nationality.

The appointment will be for six months in the first instance.

Salary approximately £300 per annum, with board and residence in the Hospital.

Candidates must be doubly qualified, registered and unmarried.

Previous Hospital experience essential, and knowledge of Tuberculosis work and Bacteriology desirable.

Applications, stating age and qualifications, with one copy of three recent testimonials, should be sent at once to the Medical Superintendent, Royal National Hospital for Consumption, Ventnor, Isle of Wight.

September 24th, 1928.

Macclesfield General Infirmary.

(General Hospital of 100 beds.)

Wanted, RESIDENT HOUSE SURGEON. Salary £180 per annum, with board and residence.

Applications, accompanied by copies of three recent testimonials, to be sent to the Secretary not later than October 3rd.

St. Mary's Hospitals, Manchester.

—Two HOUSE SURGEONS for the WHITWORTH-STREET WEST HOSPITAL (Maternity); and two for the WHITWORTH PARK HOSPITAL (Gynæcological), each for a period of six months from the 1st November next. Salaries at the rate of £50 per annum, with board and residence. Applications, with copies of three testimonials, to be sent to the undersigned on or before the 10th October. R. RATCLIFFE, Secretary.

General Hospital, Nottingham.

—Wanted, a HOUSE PHYSICIAN. Appointment for six months, commencing November 1st. Salary at the rate of £150 a year, with board, residence, and laundry. Applications, stating age, qualifications and experience, with copies of testimonials, to be delivered to me not later than Monday, October 8th. The appointment will be made on Wednesday, October 10th.

PETER M. MACCOLL, House Governor and Secretary.

Southern Rhodesia Medical Service.

GOVERNMENT MEDICAL OFFICER required for Southern Rhodesia Medical Service. Salary £500 per annum, rising by £25 per annum to £600 per annum, with Private Practice. Applicants must be single, twenty-five to thirty years of age. Preference will be given to holders of Public Health or Tropical Medicine Certificates.

Applications, with full particulars of qualifications, age, past appointments held, &c., with copies of references, should be addressed to the Medical Director, Salisbury, Southern Rhodesia, and should reach that office not later than 26th October, 1928. Copies of the Conditions of Appointment to the Southern Rhodesia Medical Service can be obtained from the Secretary, Office of the High Commissioner for Southern Rhodesia, Crown House, Aldwych, London, W.C.2.

MAURITIUS.

The Government of Mauritius desires

the services of a MEDICAL OFFICER OF HEALTH at Port Louis. The salary of the post is at the rate of Rs.12,000 (£900 per annum), rising by annual increments of Rs.1000 (£75 per annum) to Rs.15,000 (£1125 per annum), subject to a contribution of 4 per cent. of salary towards pensions for widows and orphans of deceased public officers. The appointment is for three years in the first instance, but the selected candidate may be placed on the permanent establishment if his services during that period have proved satisfactory. Free passages are provided on first appointment. Free quarters are not provided. Essential that candidates should possess D.P.H. or equivalent qualification. Forms of application may be obtained from the Private Secretary (Appointments), Colonial Office, 2, Richmond-terrace, S.W.1.

Shanghai Municipal Council.

PUBLIC HEALTH DEPARTMENT.

SECOND ASSISTANT COMMISSIONER OF PUBLIC HEALTH (HOSPITALS).

An additional Second Assistant Commissioner of Public Health is required in the Public Health Department (Hospitals) of the Shanghai Municipal Council.

Candidates to be preferably unmarried, not more than thirty years of age, and desirably possessing D.P.H. in addition to registrable Medical and Surgical qualifications.

They must have held Resident Hospital appointments, Medical and Surgical, and practical experience of Isolation Hospital, Venereal Diseases and Tuberculosis Services is desirable.

Salary Taels 650 per mensem, under a three years' agreement, renewable at a higher salary in the event of satisfactory services. First-class passage is given, with half-pay during voyage.

Eight months' leave is given on full pay, with first-class passage, after every period of five years' service in Shanghai.

Free medical attendance is provided, and there is participation in the benefits of a Superannuation Fund.

A Tael at the present rate of exchange equals 2s. 6d. (two shillings and sixpence); exchange is, however, subject to fluctuation.

Particulars of the appointment and full details as to the benefits enjoyed by Municipal Employees under their Terms of Services, and as to cost of living, &c., may be obtained from the Council's Agents.

Application, in candidate's own handwriting, with full information as to qualifications and experience, &c., accompanied by at least three recent testimonials and endorsed "Second Assistant Commissioner of Public Health" (Hospitals) on the cover, should be forwarded, not later than Thursday, October 25th, 1928, to :— JOHN POOK & COMPANY,

Agents for the Municipal Council of Shanghai,
68, Fenchurch-street, London, E.C.3.

October, 1928.

Wanted. — Assistant Clinical

PATHOLOGIST, Hong-Kong. Salary £720, rising to £870, and percentage of profits.—Particulars, &c., Address, No. 344, THE LANCET Office, 423, Strand, W.C.2.

The Liverpool Eye and Ear Infirmary,

Myrtle-street.—Applications are invited for the post of HOUSE SURGEON (Male) to the above Institution. Salary £100 per annum, with board and lodging. Duties mainly in Ear and Throat Department. Applications, stating age and qualifications, together with copies of not more than three recent testimonials, should be sent before October 3rd, to Charles W. Wright, Esq., 9, Harrington-street.

The Liverpool Eye and Ear Infirmary,

Myrtle-street, Liverpool.—Applications are invited for the post of HONORARY ASSISTANT SURGEON to the Ear, Nose, and Throat Department of the above Infirmary.

Applicants, who will be required to attend on two afternoons a week, should send all essential details with copies of three recent testimonials, by October 2nd, to CHARLES W. WRIGHT, Esq., 9, Harrington-street, Liverpool.

Derbyshire Royal Infirmary, Derby.

(General Hospital, 336 beds.)

Applications are invited for the post of ASSISTANT HOUSE SURGEON AND CASUALTY OFFICER (MALE).

Candidates must be qualified and registered under the Medical Acts.

The appointment is tenable for six months. Salary will be £150 per annum, with apartments, board, &c.

Applications, with copies of not more than five testimonials, to be sent to the undersigned not later than October 12th. Duties will commence on November 1st.

WALTER BANKS, Superintendent and Secretary.

21st September, 1928.

Norfolk and Norwich Hospital,

Norwich.

Applications are invited for the following posts which will be vacant on the 1st November next:—

HOUSE SURGEON, for which appointment preference will be given to a candidate who has held a previous Hospital appointment.

CASUALTY OFFICER AND HOUSE SURGEON (with charge of 25 beds). Salary for both posts £120 per annum with board, residence, and laundry. Candidates (Male) who must possess registered qualifications, should forward applications stating age, nationality,&c., together with copies of testimonials, to the undersigned, not later than Tuesday 9th October, 1928.

FRANK INCH, House Governor and Secretary.

21st September, 1928.

Wolverhampton and Staffordshire HOSPITAL.

(Incorporated by Royal Charter).

Two ASSISTANT HOUSE SURGEONS (Male) required. Duties will commence on 4th of October, and will include Casualty work and administration of anæsthetics.

The Hospital contains 210 beds, and includes the usual special departments, and is recognised by the various Examining Bodies for a part of the requisite attendance on Medical and Surgical Practice.

Candidates must be registered under the Medical Acts, and unmarried.

The appointment is for six months, with eligibility for further appointment for six months as House Surgeon to In-patients.

Salary at the rate of £125 per annum, board, furnished rooms, and laundry provided.

Applications, with copies of testimonials, to be forwarded to the undersigned.

W. H. HARPER, House Governor and Secretary.

24th Sept., 1928.

North Staffordshire Royal Infirmary,

Hartshill, Stoke-on-Trent.

The Committee invite applications for the following post:—

HONORARY ASSISTANT AURAL SURGEON.

Candidates for appointment to the Staff as Honoraries in the Aural Department must produce satisfactory evidence of having (after becoming qualified) gained special knowledge of the subject; and must, in addition, produce evidence that they hold the Diploma of Fellow of one of the Royal Colleges of Surgeons of Great Britain or Ireland or the Diploma of Laryngology and Otology.

All the members of the Honorary Medical and Surgical Staff must reside within the City of Stoke-on-Trent or within a radius of five miles of the North Staffordshire Royal Infirmary and must be communicable by telephone.

Candidates will be required to attend before the Election Committee at this Infirmary on Thursday, 18th October, 1928, at 3 P.M.

Canvassing will disqualify.

No testimonials will be permitted, but a candidate will be allowed to send to each member of the Election Committee a copy of his or her application, in which will be stated age, qualifications and experience.

A list, giving the names and addresses of members of the Election Committee, may be obtained from the undersigned, in whose hands applications for this post must be (with proof of the necessary qualifications) on or before Saturday, 6th October, 1928.

The Election Committee do not bind themselves to make the appointment at their Meeting.

By order of the Committee.

W. STEVENSON, Secretary and House Governor.

22nd September, 1928.

Northampton General Hospital.

There is a vacancy for one ASSISTANT HOUSE SURGEON (Male), attached to the Ear, Nose and Throat Department. British nationality. Salary £150 per annum, with board, residence, and laundry.

The successful candidate will be appointed for a period of six months and will be eligible for re-election for a further period.

Candidates must be duly qualified and registered.

Applications, stating age, qualifications, &c., with copies of testimonials, to reach the undersigned not later than the 10th October, 1928.

H. St. JOHN WOOD, Secretary-Superintendent.

24th September, 1928.

Jersey General Hospital and Poor LAW INFIRMARY.

RESIDENT MEDICAL OFFICER.

Applications are invited for the above post (male). Applicants must be duly qualified practitioners in medicine and surgery. Salary £200 per annum, with board, residence in the hospital, and laundry.

The appointment is for one year, and is renewable. Applications, with testimonials, must be sent in on or before Saturday, September 29th, 1928, addressed to the undersigned, from whom further particulars may be obtained.

P. BEUZEVAL, Secretary.

Gloucestershire Joint Committee for TUBERCULOSIS.

STANDISH HOUSE SANATORIUM, STONEHOUSE, GLOS.

Applications are invited from registered Medical Men for the post of ASSISTANT MEDICAL OFFICER at the above Institution. No previous professional experience is necessary.

There are at present 178 beds, including men, women and children. An orthopædic block is shortly to be opened.

The salary is £250 per annum, with board, furnished apartments, and laundry, in addition.

The appointment will be terminable by six weeks' notice on either side.

Applications, stating qualifications, experience, and age, and accompanied by copies of three testimonials, should be received not later than the morning of Saturday, 13th October, 1928.

E. T. GARDOM, Clerk of the Joint Committee.

Shire Hall, Gloucester, 24th Sept., 1928.

City of Leeds.

ASSISTANT MEDICAL OFFICER FOR MATERNITY AND CHILD WELFARE.

Applications are invited from qualified and registered Medical Practitioners for the post of Assistant Medical Officer for Maternity and Child Welfare. Applicants must have had not less than three years' post-graduate experience, including experience in General Medicine and Surgery, and in the treatment of Children's Diseases and Diseases of Women. Preference will be given to candidates possessing the D.P.H. The salary offered is £600 per annum.

The person appointed will be required to pass a medical examination and to contribute to the Superannuation Fund established under the Local Government and Other Officers' Superannuation Act, 1922. He or she will also be required to enter into an agreement of service with the Corporation, terminable by one month's notice on either side.

Form of application and particulars as to the duties of the appointment may be obtained from the Medical Officer of Health, 12, Market Buildings, Vicar-lane, Leeds.

Applications, endorsed "Maternity and Child Welfare Officer," together with copies of not more than three recent testimonials, must be delivered at my office, 26, Great George-street, Leeds, not later than the first post on Saturday, October 13th, 1928.

THOS. THORNTON, Town Clerk.

Borough of Nuneaton.

ASSISTANT MEDICAL OFFICER.

The Council invite applications from male registered Medical Practitioners for the post of whole-time Assistant Medical Officer of Health and Assistant School Medical Officer, under the direction, supervision, and control of the Medical Officer of Health, at a salary of £600 per annum.

A deduction of five per cent. will be made from the salary in accordance with the provisions of the Local Government and Other Officers' Superannuation Act,1922, which has been adopted by the Council.

Applicants must have had experience in the prescription of glasses for errors of refraction, ante-natal work, and children's ailments.

The appointment will be subject to two calendar months' notice on either side, and to the approval of the Board of Education. The Officer will be required to reside within the Borough of Nuneaton, and will not be allowed to engage in private practice.

Applications on forms to be obtained from the undersigned, endorsed "Assistant Medical Officer," accompanied by copies of three recent testimonials, must be delivered on or before October 6th, 1928.

PERCY G. HORSBURGH, Medical Officer of Health.

Health Dept., Newdegate-place, Nuneaton, Sept., 1928.

County of Lanark.

UPPER WARD DISTRICT.

The District Committee invite applications for the post of RESIDENT PHYSICIAN for their Infectious Diseases Hospital and Tuberculosis Sanatorium at Roadmeetings, Carluke. Salary £350 per annum, with board and lodging. Applications to be lodged with the subscribers not later than the 8th day of October, 1928.

J. McCHIE,
ROBERT BRYCE WALKER,
District Clerks.

District Offices, Lanark, 22nd September, 1928.

Cardiff Royal Infirmary.

(Associated with Welsh National School of Medicine.)

APPOINTMENT OF HONORARY ASSISTANT SURGEON TO THE EAR, NOSE AND THROAT DEPARTMENT.

Applications are invited for a Vacancy in the office of Honorary Assistant Surgeon to the Ear, Nose and Throat Department. Candidates must be Doctors of Medicine or Masters of Surgery in one of the Universities of the United Kingdom, or Fellows of one of the Royal Colleges of Surgeons in the United Kingdom, or Fellows or Members of the Royal College of Physicians of London, or Fellows of one of the other Royal Colleges of Physicians in the United Kingdom, and the elected candidate shall confine himself in his practice to his specialty.

Each candidate is required to send 50 copies of his application and testimonials, stating age, qualifications, appointments held, &c., and endorsed "Honorary Assistant Surgeon to the Ear, Nose and Throat Department," to reach the undersigned on or before Saturday, 13th October, 1928.

LEONARD D. REA, Secretary, Cardiff Royal Infirmary.

Post-graduate (Man) offered Board- residence in return for occasional Assistance to Doctor, N.W. London.—Address, No. 356, THE LANCET Office, 423, Strand, W.C.2.

Assistant wanted, £400 with share of profits (total over £500), 5-roomed, newly decorated, house, garage. East London.—Send particulars to No. 354, THE LANCET Office, 423, Strand, W.C.2.

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Assistantship wanted by M.B., Ch.B. Edinburgh. Three years' Hospital experience; about one year G.P. Abstainer; keen; can drive car. Country Town or Seaside preferred.—Address, No. 358, THE LANCET Office, 423, Strand, W.C.2.

State Registered Nurse, recently qualified, Matriculated with Hall dispensing certificate, and knowledge of French, seeks post as NURSE-SECRETARY to Specialist, London district preferred.—Write, No. 359, THE LANCET Office, 423, Strand, W.C.2.

Secretarial Post wanted by Lady (32). Thoroughly experienced Medical work (Hospital and Consultant). Quick, reliable worker. Good accounts, shorthand, typing.—Address, No. 361, THE LANCET Office, 423, Strand, W.C.2.

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Educated Lady desires Half-day SECRETARIAL post in London. Private or professional. Tactful, self-reliant and experienced correspondent.—Address, No. 349, THE LANCET Office, 423, Strand, W.C.2.

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Wanted by F.R.C.S. (Eng.), 32, ex-Registrar London Hospital, PRACTICE or PARTNERSHIP. Surgical scope essential. Very good operator, wide experience, well received. Capital available.—Address, No. 355, THE LANCET Office, 423, Strand, W.C.2.

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Woman's Nucleus in pleasant Resi- dential Town for immediate Sale. Little night work. No panel, but scope for such. Convenient house to rent.—Address, No. 357, THE LANCET Office, 423, Strand, W.C.2.

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Worcestershire.—An old-established PRACTICE. Receipts £1000 per annum; fair panel. Nice house; rent £80. Vendor's own property. Premium required £2000 or near.—Apply, Peacock & Hadley, Ltd., 19, Craven-street, Strand, W.C.2.

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CONSULTING ROOMS and HOUSES in HARLEY-street, Wimpole-street, and Medical area generally.
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Medical Men wishing to receive Resident Patients should enrol their names on the books of the BRITISH MEDICAL BUREAU. A large number of Patients are placed yearly through this medium.

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The BRITISH MEDICAL BUREAU has its own staff of fully qualified Accountants wholly engaged on Medical work, i.e., Investigation of Practices for purchasers, Income Tax, Auditing books and accounts, etc.

SCHOLASTIC DEPARTMENT.

Medical Men will find this Department of the BRITISH MEDICAL BUREAU of great assistance in the selection of Educational Establishments, Private Tutors, Governesses, etc. Prospectuses and advice gratis.

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4. NORFOLK.—Very old-estab. unopposed Country PRACTICE, situated in a very attractice part of the County. Gross cash receipts average nearly £1400 p.a. Panel of 930, and appts. worth about £160. Fees 3s. upwards, with medicine extra. About 20 cases of Midwifery from 2 gns. upwards. Good, detached, double-fronted house, in own grounds, with 3 reception, 6 bedrooms, &c., and professional accommodation. Price for freehold £1600, part on mortgage. Sport of all kinds. Premium 1½ years' purchase.
5. SURREY.—Riverside Town.—PARTNERSHIP.—A one-third share, to commence with, in an old-estab., sound, non-dispensing, non-panel Practice. Income for past twelve months over £1800, with scope for increase, and surgery. Fees from 5s. to 21s. A suitable house can be bought. Premium 2 years' purchase.
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7. LANCS.—In a rapidly growing good-class suburb of large town (pop. nearly 200,000), a very old-estab. PRACTICE held by Vendor over 30 years and averaging about £900 p.a., including union (£80 with prospect of increase shortly) and panel of nearly 1000. There is a surgery in centre of town, to which bulk of practice and panel work is attached. Private residence contains 2 reception, 3 bedrooms, bathroom, &c., and small garden. Both Vendor's properties. Price £1750, £900 on mortgage, or would be rented. Premium 1½ years' purchase.
8. NEAR BIRMINGHAM.—Large Town.—Very old-estab. sound middle- and Working-class PRACTICE. Income for the immediate past 12 months over £2200 and increasing. Panel of 2840. No appts. Fees 3s. 6d. to 7s. 6d. Not much Midwifery from 3 gns. upwards. Good modern house, with 3 reception, 7 bedrooms, &c. Surgery premises with 2 waiting, 2 consulting-rooms and dispensary, &c. Can be rented at £80 p.a. Premium for Practice and freehold house £4500.
9. NORTH CORNWALL.—PARTNERSHIP.—A two-thirds share is for disposal (owing to the retirement of the senior of two partners) in an old-estab. good mixed-class Practice, situated in a beautiful district within easy reach of the sea. Average gross cash receipts for the past 3 years £3224. Panel of over 900. Fees 3s. 6d. to 21s. Good house with 2 reception and 9 bedrooms, &c., waiting-room and dispensary. Large garden ; garage. Can be rented on lease at £55 p.a. Sport of all kinds and preparatory school in town. Premium 2 years' purchase.
10. KENT.—In a thriving Riverside and Hospital Town (pop. over 40,000), within 40 miles of London, old-estab. Mixed-class PRACTICE, producing last financial year £2150, including over 1300 panel patients and increasing. House contains consulting, waiting-rooms, and dispensary, 2 reception, 4 bedrooms, bathroom, &c. Small garden and garage. Rent on lease £60 p.a. Premium £3600, to include good book debts (vendor going abroad) worth £600, drugs, &c., and consulting-room and surgery furniture.
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13. WILTSHIRE.—Unopposed old-estab. country PRACTICE, situated in very pretty district and averaging £700 p.a., including Union appt. £70 and panel producing £450. Nearest opposition 3½ miles. Railway station 1 mile. House stands in own grounds of 1½ acres with tennis court, garage, &c., and contains surgery, 3 reception, 5 or 6 bedrooms, bathroom (h. and c.). Electric light plant installed. Vendor's freehold, price £2500, all of which could remain on mortgage if wished. Premium £1050.
14. WEST MIDLANDS.—In a small Country Town, amidst delightful surroundings, an old-estab. PRACTICE worth £1200 a year, including panel and appts. £600. Commodious house with surgery. &c. (separate entrance) very nice garden, tennis court, garage. Price £2400. Premium 1½ years' purchase. Sport, &c.
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16. MANCHESTER.—Rapidly developing outlying suburb.— Good middle- and working-class PRACTICE, increasing and producing for the last 12 months over £1500. Panel of 700. Fees from 3s. 6d. Particularly good house specially built, and containing 3 reception, 5 bedrooms, &c. Electric light. Garden, garage. Price £3550, part on mortgage. Premium £2250.
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18. NORTH WALES.—PARTNERSHIP.—A third partner is required in a mixed class Practice situated in a small country town. The share for disposal produces over £800 p.a. Fees 2s. 6d. to 21s., medicine extra. Little Midwifery. Large detached house, with good garden. Freehold, price £2000, or might be let. Premium £1200.
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20. WEST OF ENGLAND.—Large Town.—Old-estab. good Middle- and Working-class PRACTICE. Income, including panel of 555 and appts. worth about £250, approximately £1000 p.a. Fees 2s. 6d. to 21s. Very little Midwifery at 2 and 3 gns. Nice house, with 3 reception, 5 bedrooms, &c., separate entrance to professional rooms. Freehold. Price for practice and house £3000.
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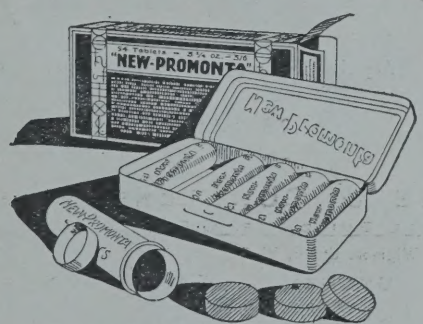

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